OUTLINE HISTORY
OF
INDIANA AGRICULTURE

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OUTLINE HISTORY

OF

INDIANA AGRICULTURE

BY

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Lafayette, Indiana

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DEDICATION

Cordially dedicated to the Four-H Club Boys and Girls of Indiana in recognition of their good work and in the expectation that, by their future achievements, they will continue to add luster to our own Hoosierland.

W C Latta

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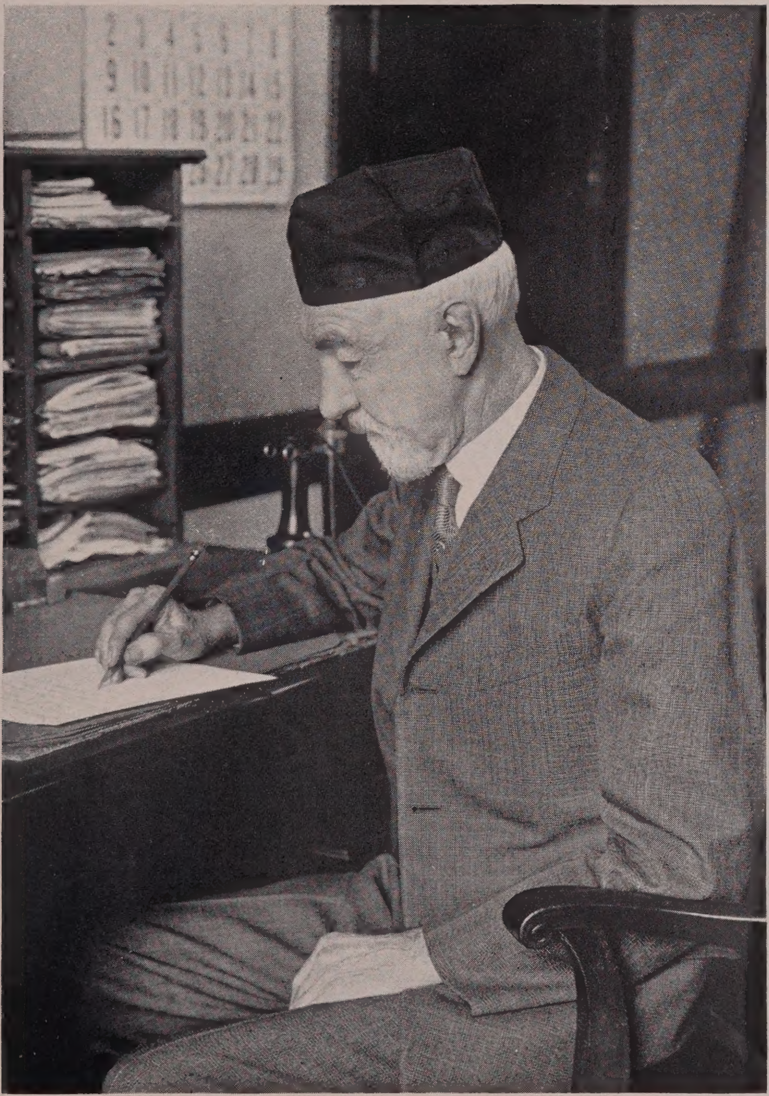

THE AUTHOR AT EIGHTY

THE AUTHOR

Professor William Carroll Latta, author of "An Outline History of Indiana Agriculture," was informed as was perhaps no other man of history, spanning the period from 1800 to 1930, which is covered by this volume. His eighty-five years of life, stretching from the middle of the last century to beyond the first third of the present century, enabled him to know of and appreciate the pioneer stages of Indiana agriculture and to observe the transition that has taken place in this basic industry during the last fifty or sixty years. His own leadership of and participation in many important projects connected with the broad field of agriculture for more than half a century gave him an opportunity for service and observation offered to but few men. Therefore, this volume is more than mere narration of facts important as they are in any historical document.

The author was born on a farm in LaPorte County, Indiana, March 9, 1850, but grew to manhood on a farm in Noble County. In 1877, he was graduated in agriculture from Michigan State College and after teaching rural schools for a few years returned to his alma mater for a master's degree, which he obtained in 1882. In August of that year he came to Purdue University as a teacher of agriculture. Although some preliminary work had been done, Professor Latta really organized the first courses in agriculture on the campus and taught all of them.

Full of ambition and desirous of finding new facts for farmers he instituted shortly after his arrival on the campus the first experimental work in agriculture, laying out plots, some of which have been in continuous use since the fall of 1882, for experimental purposes. For many years they were used for fertility studies with field crops but in recent years they have been used for horticultural and floricultural studies. These experimental plots served as a stepping stone to the much more extensive program inaugurated after the Purdue University Experiment Station came into being in 1887, almost five years after the pioneer effort on the part of this far-seeing instructor. When the Experiment Station began to function as such, Professor Latta was one of the guiding hands in planning and carrying through many of its projects.

Realizing that information developed by research in laboratory, fields, or feed lot meant little unless it could be put to work by the actual farmer, Professor Latta early conceived the idea of taking this new knowledge to the farmers. He started holding farm meetings along the highways and byways of Indiana to discuss current problems of crop and livestock production, important topics to the farmers of the state.

These meetings were called farmers' institutes. The legislature of 1889 provided $5,000 to develop this type of work. These meetings gained rapidly in popularity and became an important medium of contact with the man on the land. As many as a quarter million persons per year have attended these institutes and more than 100,000 persons a year still find them sources of inspiration and information. Thus, today, after almost half a century of service, the idea developed by the tireless worker for the common good, remains as a powerful force for the betterment of the state of Indiana, a monument to the skill and zeal of Professor Latta.

This brief review reveals Professor Latta as the founder of teaching, research, and extension phases of agricultural education in Indiana.

It was peculiarly fitting that when he was relieved at his own request of his more strenuous duties as State Leader of Institutes in 1923, that he continued as consulting specialist on the staff of the Department of Agricultural Extension, that he might write a history of the field to which he had devoted his life. For this purpose he not only drew from his own rich fund of knowledge but also from the hundred of sources of information in the state that he had learned to know through his years of activity. Facts were assembled with painstaking care in every detail, corrected and recorrected as he gathered more accurate knowledge, until finally presented in their present form.

The history was practically finished in 1930 but Professor Latta continued his work, ever making more complete the information in his crowning task, which was completed only a few months before his final illness. Because of lack of funds, the history was not published at once, but was deferred until its sponsorship was undertaken by Epsilon Sigma Phi, honorary fraternity for agricultural extension, which received the cooperation of the Department of Agricultural Extension and the Agricultural Experiment Station of Purdue University in making possible this volume.

No record of Professor Latta's activities in the field of agriculture would be complete without some reference to his exemplary private life which was well summarized in one paragraph from an editorial that appeared in the Lafayette Journal and Courier at the time of his passing, December 22, 1935. It reads as follows:

"The fifty-four years he served the people as a forceful factor in the development of the progressive usefulness of Purdue University were golden years for both Professor Latta and friends of the institution. The memory of this stately, modest, serene, poised, and potent Christian gentleman, for many years a familiar and courtly personality, will abide long, a benediction and a blessing upon the lives and works of all who knew him either as a teacher, associate, leader or neighbor."

INDIANA[1]

By Mrs. Sarah T. Bolton

(A prophecy written in the '30's of last century)

Home of my heart, thy shining sand,
Thy forests and thy stream,
Are beautiful as fairyland
Displayed in fancy's dreams.

Home of a thousand happy hearts,
Gem of the far wild West,
Ere long thy sciences and arts
Wild gild the Union's crest.

Thy skies are bright, thy airs are bland,
Thy bosom broad and free;
We need not wave a magic wand
To know thy destiny.

Great spirits bled, and dying gave
Thy stars and stripes to thee;
Thy sons would die that trust to save
In pristine purity.

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[1] Reprinted from Parson's, "A Tour Through Indiana in 1840," by permission of the Editor, Kate Milner Rabb, and of the publishers, Robert M. McBride & Company, New York.

INTRODUCTION

The preparation of this history of Indiana agriculture was suggested by George I. Christie, former Director of the Experiment Station and Extension Departments, and approved by Edward C. Elliott, President of Purdue University.

As only an outline history of the agricultural development of the state is here presented, there has been no attempt at fullness of detail. The aim has been, rather, to note only the salient features of Indiana's agricultural advance from the almost primitive farming of 1800 to the highly developed agriculture of the present time.

It has seemed best to narrate the steps of progress in agricultural production only. To others, therefore, is left the task of tracing the advance in the grading, processing, distribution, and marketing of the farm products and the contribution of agriculture to the wealth of the state. Further, only the more important food crops and the leading pure breeds of live stock have received consideration.

As biography is aside from the purpose of the story, the pioneer leaders have been mentioned only incidentally in connection with the phases of agriculture which they promoted. Although the list of these pioneers is doubtless very incomplete, it is believed that the more prominent and more widely useful have been included. Important additions to the list will be gratefully received.

In general, the story relates to the state as a whole or to some considerable section of it, such as the commercial melon or vegetable growing area. However, the tables in the appendix give what is believed to be approximately correct information concerning the several counties of the state. This information has been obtained through personal interviews with the older farmers and other citizens whose memories recall, with reasonable clearness, events as early as 1850, and whose family records or traditions, in some cases, carry their knowledge almost a quarter century farther back.

The aim has been to trace, though very briefly, the gradual transition from the self-sufficing agriculture of 125 years ago to the self-renewing and increasingly profitable, balanced mixed husbandry of the present time, and to note the contemporary change in the farmer himself from indifference concerning education to eagerness in his quest for light on the principles of agriculture and from an apologetic attitude to the self-respecting bearing of the present-day husbandman citizen.

The chronologic order in the arrangement of events relates to the chapter rather than to the story as a whole. For example, the chapter on soils aims to cover, in a very brief way, the whole range of soil treatment from the earliest practice to the most recent. The same rule applies especially to the chapters on crops, live stock, and agricultural organizations.

The maps, graphs, tables, and other illustrations have been introduced partly as a background to the early history of the state, but chiefly to portray more vividly the remarkable agricultural progress of a century and a quarter; to show in some measure the rate and extent of this progress in the several counties; and to give the present status of the animal husbandry development in the state.

The great improvement in the agriculture of Indiana in the last fifty years, caused by the applications of science in field and animal production, is briefly traced in the closing chapter. The relation of Purdue University to this improvement is also briefly shown.

As nearly all the dates in the tables of the appendix have been given by the older farmers from memory, the information thus afforded is only approximately accurate. For this reason corrections of known errors in either statements or dates will be thankfully received.

The writer is keenly aware of the incompleteness and shortcomings of the story, and hence will welcome constructive criticism and helpful suggestions that will improve a possible future edition.

It is gratifying to note that the recent and prospective centennial celebrations of the founding of the counties are awakening an interest and just pride in the history and achievements of the state. This interest in the past and in the great service rendered by our forebears inspires the hope that some one with more leisure, more skill in gleaning, and a more facile pen, will more fully and more accurately portray the development of Indiana agriculture, which is and must remain the fundamental industry of the state.

ACKNOWLEDGMENTS

In the foot-notes accompanying the text the sources of information found in books, documents, and reports have been duly acknowledged. County agricultural agents and county superintendents of schools have rendered a very substantial and highly valued service in calling into their respective offices the older farmers and others for personal interviews with the writer. Due acknowledgment is here made of the assistance rendered by secretaries of flock and herd register associations and of economic and fraternal organizations, and by drain tile, silo, fertilizer, and implement companies.

Special acknowledgments are due to the Congressional Library, Washington, D. C.; to Miss Ester U. McNitt and her assistant, Miss Marie C. Thale, of the Indiana State Library; to Mrs. Nora C. Fretageot, librarian of the Workingmen's Institute of New Harmony; to Wm. M. Hepburn and his assistants of the Purdue University library. The librarians of many county seat towns have also rendered willing and helpful service.

Of the scores and hundreds who, by letter or word of mouth, have given information, the following are deserving of special mention: Reid Armstrong, R. N. Atkinson, Frank Atwood, Miss P. Boyd, B. A. Barnett, H. S. K. Bartholomew, Oscar Beesley, Mrs. J. H. Brooks, M. A. Brouillette, Charles Buckley, A. G. Burkhart, J. B. Burris, "Uncle Joe A." Burton, C. E. Butler, T. M. Campbell, Guy Cantwell, J. D. Conner Jr., A. J. Cosand, Miss Drusilla Cravens, Maurice Douglas, Addison Drake, E. E. Eliott, C. C. Fisher, Mrs. W. B. Flick, Taylor Fouts, W. F. Franklin, E. S. Frazee, Arthur Goss, B. J. Griswold, Joshua Groves, J. H. Gwaltney, Mrs. Sarah C. Harrell, G. B. Hawthorne, M. L. Heathman, Eli Helser, E. S. Hobart, J. H. Hoffman, Mrs. A. C. Hume, J. E. Iglehart, D. B. Johnson, F. P. Johnson, James Kline, Oliver Kline, Alex. Knisely, V. M. Krick, Mr. and Mrs. C. N. Lindley, S. H. and Florence Little, S. F. Lockridge, J. A. McCarty, C. N. McClamrock, W. H. McDaniel, H. M. McGrain, A. G. Mace, Wm. Madigan, D. F. Maish, J. W. May, Mrs. V. C. Meredith, I. M. Miller, E. S. Mills, Dr. P. G. Moore, Mrs. Harvey Morris, F. I. Odell, R. A. Ogg, W. H. H. Parks, E. H. Peed, Geo. Pence, H. C. Phelps, H. W. Ricketts, C. W. Ross, Sam Schlos-

ser, Jacob Schneider, W. H. Senour, Archibald Shaw, W. H. Simmons, R. A. Simpson, Mrs. Ella Spindler, Mr. and Mrs. Zach. Stanley, B. F. Stewart, H. M. Stoops, S. V. Strain, Isaac Strouse, G. W. Thomas, R. L. Thompson, Carl Tuttle, A. D. VanOsdol, Elmer Waters, Wm. Watson, J. E. Webb, E. P. Welborn, G. R. Wilson, S. B. Woods.

To Professor Robert W. Babcock, University Editor, for editing the manuscripts, and to other members of the University Staff who by way of suggestion, service, or information, have aided in the preparation of this volume, the writer expresses his grateful appreciation.

—The Author.

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CHAPTER I.

AGRICULTURE OF THE AMERICAN INDIANS

THE MOUND BUILDERS—Agriculture in Indiana as elsewhere, antedates history. A prehistoric race, called mound builders because of the huge mounds of earth which they built, must to some extent have followed agriculture. The monuments of this bygone race are found in many parts of Indiana, and their building with only the simplest of hand implements, required not only hundreds of workers, but also settled habitation for long periods. The growing of crops was therefore essential to the subsistence of this primitive race.

Food Products Exhumed—Bulletin 326 of the Ohio Experiment Station informs us that shelled corn, carbonized corn stalks and ears, beans, dried fruit of the wild red plum, nuts, and seeds of the pawpaw and wild grape have been found in these ancient mounds. Numerous stone pipes suggest that tobacco may have been grown. Bones recovered indicate that only the dog had been domesticated. Recent explorations of mounds in Franklin county, Indiana, bring to light interesting relics, but reveal nothing about the agriculture of the mound builders.

Cropping Unknown—We have no hint as to the method of cropping or that animals (aside from the dog) were domesticated for any purpose. The remains of this people which have partially resisted the ravages of time, are too meager and inconclusive to warrant any definite statement concerning the agriculture of the mound builders.

We can only infer, therefore, from their settled habitations and the few relics which have been exhumed, that the mound builders were to some extent at least an agricultural people.

American Indians—Most historians tell us very little about the agriculture of the American Indians. They do tell us, however, that in various military expeditions of the whites against the Indians (in Indiana as well as elsewhere) the cornfields of the latter were sometimes destroyed and their villages burned to prevent Indian raids upon white settlements. Indian villages near Logansport and the mouth of the Tippecanoe river, and on the Wea plains in the south part of Tippecanoe County, with their adjacent cornfields, covering, it is said, hundreds of acres, were thus destroyed. These are only three examples of the many that might be given to prove that corn was extensively grown by the Indians within the bounds of Indiana. But Indian corn must have formed a considerable part of the diet of the Indians during the fall and winter months.

Indian Agriculture — The most complete and satisfactory account of the agriculture of the American Indians which the writer has seen, is in Carrier's "Beginnings of Agriculture in America". This author says, "The historical evidence beyond question proves that the great majority of the Indians lived in fixed habitations, tilled the soil, and subsisted as much if not more on their agricultural products, than they did on those of the chase." Carrier further states that the few wandering tribes of Indians were of no more significance than the tramps and scalawags of our own society. Although Carrier has little to say concerning the Indian tribes of the Middle West, it seems fair to assume that their agriculture was much like that of their neighbors of the Atlantic seaboard in the same latitude: The squaws and children of the Wea tribe cultivated wide fields (doubtless chiefly corn) on the Wea Plains a few miles south of Lafayette.[1]

In support of this view we find in Dunn's "Indiana" that, prior to 1764, the Piankeshaw Indians near Vincennes settled down for a time to a semblance of agricultural life. Dunn adds that the Miamis and Potawatomies, farther up along the Wabash, cultivated with the hoe Indian corn, potatoes, cabbages, and turnips. He further states that white prisoners of the Indians planted peach and apple trees and even taught their captors to breed poultry, pigs, and, later cows.

Crops Grown by Indians — The crops grown by the Indian tribes in the different sections of this country include: Indian corn, Irish and sweet potatoes, peanuts, some varieties of cotton, tobacco, several kinds of beans as well as sunflowers, Jerusalem artichokes, pumpkins, squashes, gourds, melons, and other plants.

Indian Corn — Indian corn was evidently the most generally and the most extensively grown crop of the Indians and by far the most important. Carrier informs us that the Indians grew, in the different sections of the country, tall varieties of corn that were eight or ten feet high, and small corn, four or five feet high. They grew dent, flint, yellow, red, blue, speckled, white, sweet, and pop corn. The period of growth ranged from eight or ten weeks for the small varieties to twelve or fourteen weeks, or even five months, for the larger kinds. In some sections two crops of the smaller varieties of corn were grown in the same season.

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[1] Esary: "History of Indiana," Vol. 1, p. 77.

Inter-Crops — Pumpkins, squashes, and beans were grown as inter-crops, the seeds being planted in or between the hills or rows of corn.

Forage Crops — The Indians made no use of hay, but they burned off the dried grasses to encourage a tender growth that would attract the buffalo, deer, and elk. This was doubtless the nearest approach to pasture management practiced by the Indians. Clifford McLeod states that the Indians cultivated a wire grass from which crude brooms were made.[1]

Forest Clearing — The first white settlers found many large clearings in the forest in which crops were being grown by the Indian farmers. Some of these tracts had been abandoned, doubtless for more fertile areas or because of the removal of the tribe to other parts. Open spaces, where available, were chosen by the Indians for their corn fields. Wherever necessary, partial clearings were made in the forest. The trees were deadened by bruising the bark with stone axes and by scorching the bases of the girdled trees.

Bogart in his "Economic History of American Agriculture" says that even before the deadened trees fell the underbrush was removed and the corn planted in rows or hills. As the dead trees fell they were burned into suitable lengths and the logs rolled together in heaps and reduced to ashes.

Method of Planting — The corn was planted in rows and sometimes in hills. Care was taken to keep the kernels an inch or more apart. The hills and rows were three to four feet apart. As the corn grew the hills were sometimes rounded up a foot or more high.

Fish for Fertilizer — The herring fish, sometimes called "alewives" by the English colonists, which swarmed up certain streams near the seaboard to spawn, were taken in great numbers by the Indians and planted with the corn to fertilize it, hundreds of acres being thus fertilized. This practice appears, however, to have been confined to New England. While early travelers reported that the Iroquois Indians of New York manured their corn fields and produced excellent corn, no information is given as to their methods of fertilization.

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[1] The "Chemawa American," November 17, 1926, a paper published at Chemawa, Oregon.

Indian Tillage — As the accounts of crop cultivation differ, the methods of tillage must have varied somewhat in different sections. According to both written descriptions and pictorial illustrations, the corn was planted in regular rows, sometimes on the level and sometimes in little hillocks. We are told that, in hill planting, only the hills were cultivated, the space between not being broken up. These little mounds, which were often a foot or more high and used from year to year, must have been in many cases fully two feet across—perhaps more—at the base. Hence a very considerable portion of the entire surface must have been cultivated.

Clean Culture — The Indian women farmers are credited with giving their crops clean culture. They and their children, according to Wood (1629), quoted by Carrier, kept their corn fields as clear of weeds as if they were gardens.

Whites Adopt Indian Methods — In practically all essentials the Indian practice of clearing away the forest and planting the crops was copied by the white settlers.

Indian Hoe — A rude hoe appears to have been the only cultural implement used by the Indians. One kind was made by placing a pointed piece of wood in the split end of a stick which served as a handle. Another was made by fastening a clam shell to a wood handle. Carver states that the shoulder blade of a moose, bear, or deer was used by some Indians instead of the clam shell.[1] Clean culture by such simple means attests the painstaking care of the squaw farmers. The whites sometimes neglected to keep down the weeds in their fields and were ridiculed for their neglect by the squaws.

Indian Instructors — It is worthy of note that probably the first duly appointed instructors in agriculture were two Indian prisoners that Captain John Smith in 1609 employed to demonstrate to the Virginia colonists, on a 40-acre field, the Indian methods of growing corn.[1]

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[1] Bailey's "Cyclopedia of American Agriculture," Vol. IV, p. 40.

Rotation of Fields—When a field became worn by repeated cropping, the Indians would clear another and allow the first to rest. This practice was, also, followed by the white settlers. Though improvident and wasteful, this course was the only feasible one when land could be taken "without money and without price" and when labor was scarce and fertilizers were not available.

Wild Food Plants—In addition to the many crops grown by the Indians, they also subsisted upon numerous wild products, including wild rye, wild rice, the several kinds of berries (the strawberry being extensively cultivated in some sections), grapes, persimmons, plums, the various nuts, and the fleshy roots (tubers and bulbs) of certain plants.

Maple Sugar—The Indians had learned the art of making sugar by boiling the sap of the maple tree. Joutel (1687), as quoted by Carrier, states that the "liquor" of the maple tree was evaporated, by the Illinois Indians, to a "sugar somewhat brownish but very good". Indiana was, according to Dunn, one of the haunts of these Illinois Indians.

Storing the Crops—Carrier informs us that the chief means employed by the Indians in preserving their cultivated crops and other food products, were drying, smoking, and storing in cribs, in baskets in their houses, or in underground pits. Fires were sometimes built under the cribs, which stood on posts, to hasten the drying of the corn. Tribes that left their summer habitation to hunt or to go to a warmer climate for the winter, would store their thoroughly dried corn and other seeds in large baskets which were placed in covered pits, the baskets being protected from contact with the soil by means of mats.

Division of Labor—The Indian women and their children performed most of the farm and other menial work. Carver states that the Indian men usually cultivated the tobacco.[2] The men did the hunting, fishing, and fighting. Carrier considers this division of labor necessary, as the success of the hunter or warrior depended, above all, on his agility, fleetness, and power of endurance for his very existence. The menial or farm work would have incapacitated him for those feats of strength and endurance for which the Indian male was noted. Carrier further states that there is no evidence to show that the women were the unhappy slaves of their husband-masters as some writers would have us believe. On the other hand, the facts seem to show conclusively that the Indian women looked forward with pleasure to the coming of spring and their work in the fields, when they could visit with their friends, enjoy the play of their children, and compete with one another in the care of their crops.

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[1] Bailey's "Cyclopedia of American Agriculture," Vol. IV, p. 40.
[2] Ibid, Vol. IV, p. 40.

Animals Domesticated by Indians—It is said that every animal capable of domestication was tamed and used by the Indians. Indian dogs (tamed wolves) were used to draw loads when the Indians moved from one place to another. Hawks were tamed by the northern tribes and used to scare away other birds from the corn fields. Southern tribes had tame geese, pheasants, and turkeys. In the Southwest, the Indians captured and used the semi-wild horses whose ancestors must have escaped from some of the early Spanish exploring expeditions. According to Ashton in his "History of Hogs and Pork Production in Missouri", the hog underwent a like experience, as the Indians were extremely fond of roast pork. In South America the llama was domesticated by the Indians and used for food, for its wool, and as a beast of burden. The horse was used only in war and hunting.

Some Ways of Preparing Food—From Carrier we learn something as to the Indians' methods of preparing their foods. The corn was pounded into meal which was made into a paste with boiling water, worked into round balls, boiled, and finally hardened by baking on a smooth stone or in an oven. "No cake" was corn parched in hot ashes. "Jonny cake" (supposed to be a corruption of "journey cake") meant small cakes of corn meal used in traveling. Strawberries (and doubtless other berries in their season) were bruised and mixed with meal to make a berry bread. The Peruvian Indians dried the potato which they called "papas" and ground it into meal for bread. The West Indians brought to Columbus boiled sweet potatoes (called batatas) on the occasion of his first visit. The persimmon was eaten in the fresh state and also dried for future use. The fleshy roots of certain plants were dried and then powdered to make bread. Since the fresh juice of some of these roots was poisonous, it was extracted by drying or otherwise so that the dried portion was wholesome. The various nuts were dried and then the nut meats reduced to powder, in which condition they are said to have kept indefinitely. This nut flour was used to flavor gruels or mix in corn bread. Oak acorns were also powdered and used in making bread, the tannin of the acorns being removed by some process in preparing them for food.

Indian Co-operation — Joutel, a French explorer quoted by Carrier, says that the Mississippi Valley Indians gathered in large numbers—very often a hundred or more of each sex—to till the ground together. After spending a part of the day in this work, the owners feasted their neighbors, and the rest of the day was spent in dancing and merry-making. Early illustrations show that this practice of working together was followed by other Indian tribes. In the rolling of logs together in heaps for burning there must, of necessity, have been the joining of Indian neighbors. As previously stated, the Indian women were accustomed to group planting and tillage when they could visit together. In their warlike operations various Indian tribes would form confederacies for both offensive and defensive purposes. This shows that the American Indians had made great progress in cooperation for both peaceful and warlike ends.

Debt of Whites to Indians — The contributions of the American Indians to agriculture are numerous and important. Carrier makes the positive assertion, based on much research, that "no people anywhere in the world ever made greater strides in plant breeding than did the American Indians." We quote further from this authority:

> "A brief enumeration of the crops and practices which we have obtained from the natives of this hemisphere speaks for itself. From the Indians we have maize and the methods of its culture, potatoes both sweet and Irish and their culture, tobacco and its culture, peanuts and varieties of cotton, all the edible beans except horse beans and soybeans, all varieties of squashes as the Hubbard, crooknecked, cymlings and cushaws, field pumpkins, sunflowers, Jerusalem artichokes, tomatoes, garden peppers, pineapples, watermelons, cassava, bananas, also many native plants which have since been

more or less domesticated as strawberries, American grapes, raspberries, blackberries, gooseberries, pecans, walnuts, butternuts, hickory unts, chinquapins, chestnuts, pinon nuts, besides a number of other food-producing plants the use of which has been abandoned.

"A comparison, crop by crop, taking into consideration acreage and value of these products, with all the other crops now grown in the United States, shows quite clearly that our agriculture is at least one-third native American."

Clifford McLeod states that the southern Indians gave the Europeans many spices.[1]

In the development and culture of corn the Indians had made remarkable progress. Through uncounted periods of time, in which the Indians had cultivated corn, they had developed varieties suited to varied climatic and soil conditions and adapted to many uses for food purposes. To quote again from Carrier: "All the changes and improvements in corn which the white man has been able to accomplish in the past four centuries, are insignificant when compared with the work of the Indians with this plant."

Wild Plants Grown by Indians—The following is a partial list of the many wild plants cultivated and developed by the American Indians: corn (widely grown); Irish potatoes (from South America); sweet potatoes (from the West Indies); tobacco (from South America, named from the island of Tobaco); tomatoes (from Central America); beans (many varieties); squashes and gourds (several kinds); pumpkins, musk and water melons; sunflowers and Jerusalem artichokes; cassava (source of tapioca, West Indies); peanuts (South America).

As previously stated the whites are also indebted to the American Indians for the practice of crop cultivation (intertillage) and clean culture of such crops as corn, potatoes, and tobacco.

Although the Indians are a practically bygone people we do well to hold in grateful remembrance their valuable contribution to American Agriculture.

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[1] The "Chemawa American," November 17, 1926.

CHAPTER II.

THE AGRICULTURE OF THE EARLY FRENCH SETTLERS

THE FIRST WHITE MEN—History records that the French were the first white people to visit the region within the bounds of Indiana. First came the explorers accompanied by missionaries and adventurers. In order to protect the claim of the French nation to this region by right of discovery, military posts were established within the bounds of the state at Kekionga (Fort Wayne), Ouiatenon, a few miles below Lafayette on the Wabash River, and Vincennes. According to Dunn's "Indiana", the first of these was established at Ouiatenon, probably in 1720.

French Trading Posts—According to the same authority French trading posts, for traffic with the Indians, soon sprang up at the above-named points, the one at Vincennes being established about 1727. Dunn is probably right in his surmise that the young bride of the Commandant, Sieur de Vincennes, may have been influential in bringing in families to relieve the loneliness of the little post.

French Settlers—At any rate French families came in 1734-5, according to Dunn. Thus was established the first settlement of white families within the bounds of Indiana. Dunn informs us that in 1769 there were 66 heads of families, fifty women, and 150 children at Vincennes. At this time there were 12 heads of families at Fort Ouiatenon and nine at Fort Wayne. These were fur traders, while a majority of the settlers at Vincennes were farmers. Therefore, to the French belongs the credit of being the first white people to engage in agricultural pursuits within the domain of Indiana.

Friendly with Indians—The French and Indians appear to have been on friendly terms from the first. This friendship resulted, in 1742, in the Indian donation to the French and their heirs of a tract of land about 24 leagues square situated on both sides of the Wabash river. The north boundary of this tract was at the abrupt bend of the river five miles below Merom, and the south boundary at the mouth of White river. In council with the English agents in 1774, and later in council with the agents of the United States, this donation was ratified by the Indians.

Tenants of the Crown — This land was not sold or given to individual farmers, but it was controlled by the Commandant or a deputy, allotments being made to the farmers for the growing of crops.

Agricultural Commune — At Vincennes an area comprising 2400 acres of good land and 3000 acres of sunken land was enclosed for a common pasture in which all the cattle were kept. The grain was grown in an open field, each farmer having a portion staked off but not enclosed. Later when the American settlers came with their custom of allowing their live stock to roam at large, the French found it necessary to enclose their "common fields". Under the government of the Indiana Territory a committee of three, chosen by the French farmers, took charge of the land. Later a syndic (agent) elected by the farmers took control of the work and apportionment of the land. After a time individual farmers who so desired were permitted to fence in their separate allotments of ground. And still later, according to Dunn, through legislation the "commons" (pasture) and the "common fields" were converted into individual holdings. This grant to individuals appears to have been to those only who could show title to their land, as the French claim to the section twenty-four leagues square, was not allowed by the American government for want of documentary evidence.

Indifference to Government — According to Dunn, who in his "Indiana" has given the fullest account of the French settlers which the writer has seen, the French farmers were not much concerned about the government under which they lived. They were therefore no match for the later-coming American settlers in the administration of public affairs, and many of them suffered adversity in consequence. Under American rule the less provident French farmers became discouraged, and some disposed of their lands for only thirty cents an acre.

Early French Agriculture — The agriculture of the French settlers was crude and primitive, but really in keeping with the time. The only cultural tools were a heavy iron hoe and a clumsy plow 10 or 12 feet long. The plow, except the share, was made wholly of wood. There was no coulter; the front end of the nearly straight plow beam rested on a short axle supported by two small wooden wheels, the larger of which ran in the furrow. The plow handles were short and nearly perpendicular. Yet it is said that good though shallow plowing was done with this implement.

Oxen Used in Plowing — Oxen were preferred for plowing. They were yoked together by a nearly straight stick shaped at the ends to fit under the horns against the forehead and tied to them by straps of rawhide. The oxen were attached to the plow by means of a pole fastened to the end of the plow beam by a hinged device. When horses were used, they were driven tandem. The very simple harness was made of withes and twisted rawhide.

French Cart — A light two-wheeled cart made wholly of wood was the only vehicle used for traveling, hauling, and farm work. It was considered superior to the four-wheeled vehicle for traveling but could not compete with the wagon for farm use.

Manure Not Used — There was no fertilization of the soil. Manure was an incumbrance to be gotten rid of in the easiest way. In winter it was usually carted out onto the ice of the streams to be floated away by the spring freshet. Sometimes the easy-going French farmer found it easier to move the stable than the large accumulation of manure.

Good Crops Obtained — The fertility of the virgin soil was so great that good crops were the rule despite the crude tillage. Plentiful harvests therefore provided not only a home supply, but also a surplus for export when prices justified. Wheat, the chief crop, was grown extensively for both home consumption and export in the form of flour. Corn was grown almost exclusively for live stock. Rice, cotton and a superior quality of tobacco were also grown, but the writer has found no record of the methods of culture and harvesting of these crops.

Live-Stock — The French settlers at Vincennes raised hogs and black cattle in large numbers. They also had good horses which they obtained from the Indians who brought them from the Spanish settlements west of the Mississippi.

Grist Mills—The French habit of clustering together in compact settlements enabled them to have grist mills of various kinds at an early date, while the scattered American farmers who came later had to depend for a time on hand mills or rude crushers for making their corn meal.

Exports—Notwithstanding their easy-going habits and crude agricultural methods, the French settlers were comfortable and at least reasonably prosperous under both the French and the British regimes. To quote from Dunn: "Nearly every year barges loaded with flour, pork, tallow, hides and leather passed down the Mississippi to New Orleans from which point the cargoes were reshipped to France and the West Indies." Sugar, metal goods, and European fabrics came back on the return trip. Esarey[1] adds beeswax, chickens, corn, hams, hogs, live cattle, meal, oats, and venison hams to the above list of products shipped south.

Orchards—Wherever permanent French settlements were made, orchards were planted, which soon produced an abundance of luscious fruit. Many varieties of seeds and fruit plants were introduced by the French settlers, and it is said that nearly all kinds of both large and small fruits were successfully grown by the French settlers on the Wabash. A large part of the apple crop was made into cider.

Vineyards—The French settlers were also vine growers. They successfully cultivated the native grape from which, according to a lieutenant named Fraser, they made "a very bad wine," although an opposite opinion was expressed by an English officer, Captain Thomas Hutchins, who said the inhabitants of the Wabash made, from a black thin-skinned grape, a "well-tasted red wine". Grapes were frequently grown on terraced bluffs or hill-sides such as still exist in Floyd county, at New Harmony, along with the Wabash river bluff north of Lafayette, and doubtless elsewhere as landmarks of early French practice.

French Gardens—The profusion of flowers and vegetables grown and the neatness and beauty of the French gardens were often mentioned by early travelers who visited the Wabash valley. The credit for these fine gardens is chiefly ascribed to the French women who bestowed much care upon them.

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[1] "History of Indiana," Vol. I, p. 270.

The French Contribution—Since they came first into the Mississippi valley and settled along the Wabash within the bounds of Indiana, the French were the first farmers. Though reasonably prosperous, they do not appear to have made any important agricultural improvements. Carrier in his "Beginnings of Agriculture in America", credits the French with bringing into the Ohio Valley Kentucky blue grass and white clover, both of which came originally from Europe. The Kentucky blue grass (poa pratensis) was so named because the American colonists found it growing luxuriantly in the limestone region of Kentucky. Another notable contribution was in horticulture. They introduced from Detroit and possibly from their mother country, choice fruits, especially pears; and their well-kept, fruitful gardens were admired by all who saw them. They set the example of peaceful living with the Indians, but sometimes debauched them with drink, as did also the British and Americans. They lived happy, contented, peaceful lives, worthy of emulation, but they lacked the industry, aggressiveness, and thrift necessary to subdue the wilderness tracts, which characterized the later-coming American settlers.

French Traits—Dunn's "Indiana" contains a very interesting description of the French settlers from which a few facts are taken. Though slave-holders, they were easy masters. Having grown up under a monarchy, they were not much concerned about their government whether French, British, or American, living simple, happy, contented, easy-going lives. They were given to sports and pastimes and made much of féte days, marriage occasions, New Year's, and Mardi Gras. They were honest, patriotic, courageous and at times even heroic. In their social life they were kindly, sympathetic, and generous, the numerous instances of their self-sacrifice making some of the brightest pages of our local history.[1]

Here are pen pictures of two extremes of French life in America. The first is of the poorer class and the second of the genteel, well-to-do rank. Both examples are taken from Dunn's "Indiana". In 1827 the Missionary Du Poisson wrote:

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[1] Dunn's "Indiana," p. 129.

"A man with his wife, or associate, clears a small section, builds him a house with four forked sticks, which he covers with bark, plants some corn and rice for his food; another year he raises more provisions and begins a plantation of tobacco; and if he finally attains to the possession of three or four negroes, behold the extent to which he can reach. This is what they call a plantation and a planter.' It is said the poorer classes never got beyond the log cabin in their architecture.

Concerning the Better Class—Dunn informs us that the older Americans cherished a "wistful memory" of the older generations of French settlers, to whom he bids adieu in these words: "We see this in the brief retrospects they have left for us, and as we read their words we pass, by some subtle sympathy of soul, into their fancies. The ancient habitant rises before us lithe and erect as in his prime. The old capote (cloak) is there, the beaded moccasins, the little earrings, and the black queue. His dark eyes glisten beneath his turban handkerchief as of yore. There stands his old caleche (cart). He mounts upon it and moves away—away—away until its creaking sounds no longer, and we realize that he is gone forever."

The story of the French occupation and settlements, with its record of intrepid explorers, zealous missionaries, bold adventurers, jovial but profligate coureurs du bois (wood rangers and fur traders), and simple-minded, easy-going, pleasure-loving, peaceful settlers, is one of romantic interest, and constitutes an illuminating and fascinating chapter of our American history.

Chapter III.

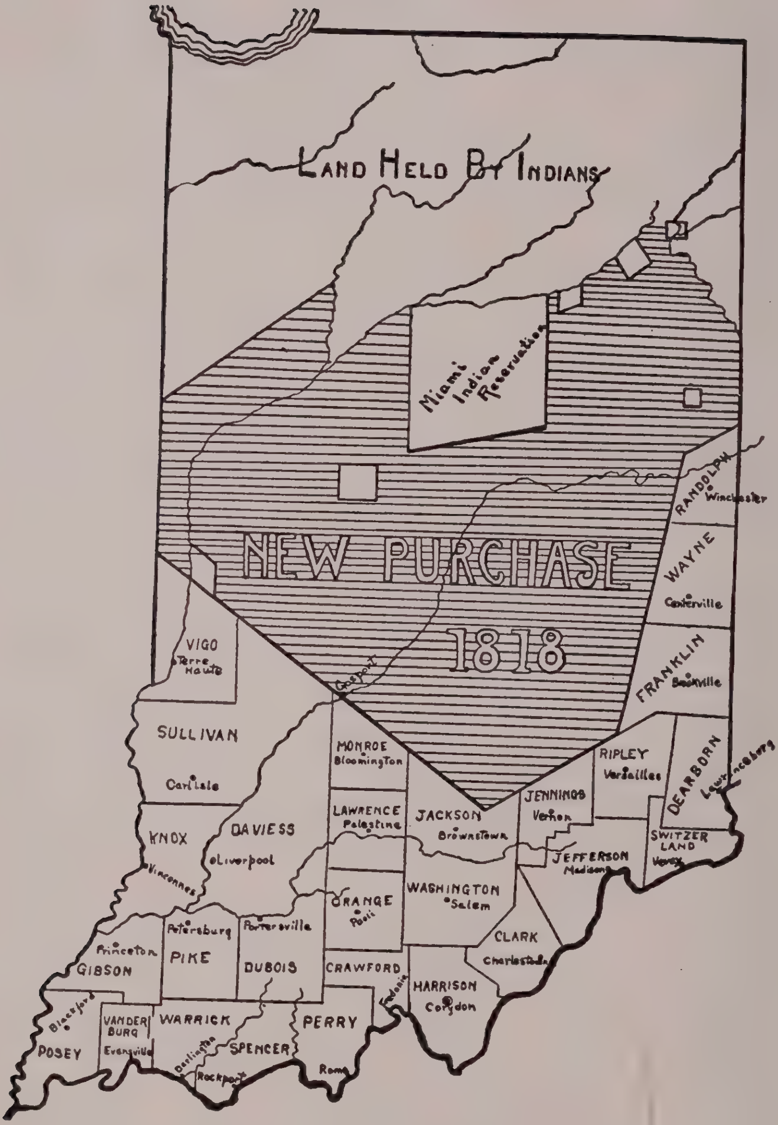
ERA OF ACTIVE SETTLEMENT IN INDIANA, 1800 - 1860

AS MOST of the white settlers in Indiana became farmers, a brief account of the period of settlement has a proper place in a history of Indiana agriculture.

Nations Concerned — As stated in Chapter II, while under the dominion of France, a small beginning was made with a few widely separated French settlements. Under the British regime, 1763-1783, settlement by other Europeans and by American colonists continued in a small way, though discouraged by Great Britain for political reasons. The active and extensive settlement of Indiana was accomplished between 1810 and 1870 under American rule.

Settlement Encouraged by Congress — Soon after the close of the Revolutionary War and in response to the earnest appeal of Congress, the rather shadowy claims of some of the original Colonies to the vast territory lying between the Appalachian Mountains and the Mississippi River, were reluctantly ceded one by one to the new Federal Government. At that time Connecticut claimed a strip of land about 65 miles wide, across the north end of Indiana, and Virginia claimed all the rest of the state. Virginia ceded her claim to the federal government in 1784 and Connecticut did likewise in 1800.

Land Survey and Sale — Congress promptly sought to replenish the depleted national treasury by the sale of lands thus ceded in that portion of the newly acquired domain known as the Northwest Territory. To avoid confusion, mistakes, and litigation from the overlapping of claims, a systematic survey of the lands in the territory was authorized by Congress in 1785. After the survey, large tracts were sold to colonization companies and wealthy private individuals. A minimum price of a dollar an acre was put on the land, and the minimum area to be sold was a square mile (640 acres). This was the law from 1785 to 1800. But as payment could be made in greatly depreciated government paper the actual price was only 8 or



Map of New Purchase 1818

The shaded part of this map represents a large cession of valuable Indiana lands to the Federal Government. The new purchase gave a great impetus to immigration into the state.—Reproduced from Woodburn's edition of "*The New Purchase*" by permission of the Princeton University Press.

9 cents an acre.[1] As a financial scheme the plan was a dismal failure.

Land Speculation — As the benefits accrued chiefly to speculators, the policy of Congress was changed in the hope of benefiting the settlers. From 1801 to 1820 the minimum size of the tract was a quarter section (160 acres) and the price was $2.00 an acre payable in four annual installments. Much land was sold under this law, but nearly one-seventh reverted for non-payment. During the period from 1821 to 1840 the credit system was abolished, the price was reduced to $1.25 an acre and the minimum area to 40 acres. A very large amount of land was sold under this law, but speculation still ran wild. To check this, Congress in 1841 passed the general preemption act which withdrew the land from public sale and reserved it for those who had made actual settlement.

As shown in the table of settlement and county organization, given in the appendix, early settlers found their way into every county of Indiana prior to 1850.

Incentives to Settlement — The motives that actuated the different classes of settlers were various. The hunter and trapper were attracted by the abundance of game and fur-bearing animals; the disgruntled, by the freedom of the frontier from the restraints of settled society; the discouraged, by the opportunity to begin anew under more favorable conditions; the trader, shipper, and merchant by the prospect of developing a profitable business; the criminal, by the chance to escape justice. The mechanic and common laborer came to find profitable employment; the doctor and lawyer, to build up a lucrative practice; the ambitious, to seek political preferment; the circuit rider, to preach the gospel; and—more numerous than all the others—the man with a family, to acquire a farm and build "a home in the wilderness". Whatever the aim of the settler, the eagerness and seriousness of his quest were shown by the efforts he put forth, the fatigues he endured, the privations he suffered, the sacrifices he made, the dangers he faced, and the obstacles he met and overcame. Onward came the settlers, singly or in caravans;[2] by water in boats down the Ohio and up its tributaries; overland in carts, two-horse and four-horse wagons; on horseback and afoot. Sometimes the family effects were placed in a hand-cart drawn by the men. A single settler's experience is here given from "Recollections of the Early Settlement of the Wabash Valley", by Sanford C. Cox:

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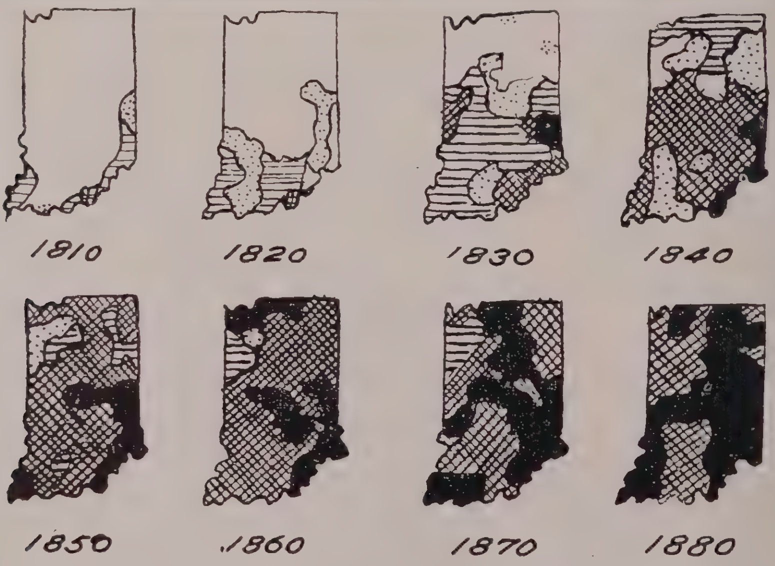
[1] Hibbard: "A History of Public Land Policies," p. 49.

[2] "The Story of Indiana," Aley, pp. 178-180.

One Settler's Experience — "One Samuel B. Clark was moving in 1826 from Ross County, Ohio, to a point in Fountain County, Indiana, near Independence. His wagon, carrying the wife, three small children, and the household goods, was drawn by two horses, one of which was blind. At White-Water Swamp, about 75 miles from their destination, the horse that could see died. The wagon and household effects were abandoned. The bed-tick was sewed up, one child was put in each end where a hole for the head was cut. The loaded tick was placed, like saddle-bags, on the back of the blind horse behind the mother who held the baby in her arms. With the family thus bestowed, the father walked and led the blind horse over the rest of the journey."

Progress of Settlement — Even before the land survey, before the cession of Indian lands, and despite the menace of the hostile red man who was instigated to deeds of violence against



This graph shows the progress of settlement and density of population in Indiana in successive decades of last century.—Reproduced by J. C. Allen & Son, from the 1917 *"Handbook of Geology,"* by permission of State Geologist, W. N. Logan.

the white settlers by both British and French influence, the hardy frontiersmen began "squatting" on eligible sites along the Ohio river. Following the Government survey and the cession of Indian lands—especially those in the central third of Indiana known as "The New Purchase" obtained in 1818—the real rush of settlement began.

Early Settlements Along the Streams—At first the settlements were almost wholly along the river courses. To avoid in some measure the disease-producing vapors of the river bottoms, the early settlers built their cabins on the higher ground a little back from, but still near to, the streams which were for a time their only practicable means of transportation. Owing to the absence of improved highways and because of the well-nigh impassable trails of the interior portion of Indiana, that section remained an almost unbroken wilderness for some time after settlement along the navigable streams.

Nevertheless, that the settlement of Indiana was rapid is shown by the following table which gives the actual and percentage increase in population by decades. For comparison, the percentage increase in the United States for the same period is also shown:

Population of Indiana by Decades

		Increase over Preceding Census		Increase in U.S.
Year	Population	Number	Percentage	Percentage
1800	5641			
1810	24520	18879	334.7%	36.4%
1820	147178	122658	500.2%	33.1%
1830	343031	195853	133.1%	33.5%
1840	685866	342835	99.9%	32.7%
1850	988416	302550	44.1%	35.9%
1860	1350428	362012	36.6%	35.6%
1870	1680637	330209	24.5%	22.6%
1880	1978301	297664	17.7%	30.1%
1890	2192404	214103	10.8%	25.5%
1900	2516462	324058	14.8%	20.7%
1910	2700876	184414	7.3%	21.0%
1920	2930390	229514	8.5%	14.9%

Figures taken from the 14th Census of the United States.

It will be noted that the greatest percentage increase in the state was in the decade 1810-1820. The greatest percentage increase in the United States was in the preceding decade. It will be observed also that the percentage increase in population was greater in Indiana than in the United States for every decade until 1870. The magnitude of the immigration movement into Indiana is best shown by the actual increase in population, which was greatest in the decade ending 1860. This was after the completion of the canals and the National Road, and after the building of many of the railroads in Indiana, a fact which shows how improved transportation helped in the settlement of the state.

As before stated, the settlement was first along the rivers. The settlement of the interior proceeded gradually from south to north as the Indian lands were successively ceded to the United States.

Timbered Land First Occupied—Notwithstanding the Herculean task of clearing the forest, the early settlers chose the higher timber lands. The reasons for this choice were: 1. Their previous experience. They were largely backwoodsmen with whom felling the trees was an accomplished art. 2. The timber indicated the type and fertility of the soil, furnished material for fuel, building, and fencing, and afforded shelter and food for both game and domesticated animals. 3. The prairie was thought unsuitable for settlement because of lack of wood and drinking water, and its productiveness was not understood. 4. The treeless marshes and low-lying rich swamp lands required immediate, extensive, and expensive drainage for which the settlers had neither adequate knowledge, necessary funds, nor suitable materials. 5. After the deadening of the trees by the girdling of the trunks and the clearing out of the underbrush, the growing of crops, which was a prime necessity, could go on simultaneously with the gradual removal of the heavy timber.

Bogart in his "Economic History of American Agriculture" has graphically emphasized the importance of the forest in these words: "Our civilization is built on wood. From the cradle to the coffin in some shape or other it surrounds us as a convenience or a necessity." A similar, but earlier thought is beautifully expressed in a stanza by Eliza Cook:

"Hold Up Your Heads Ye Sylvan Lords,
Wave Proudly In The Breeze;
Our Cradle Bands And Coffin Bands
Must Come From Forest Trees."

In quite another vein, Professor Turner, in his "Rise of the New West", credits the forest with being the birth-place of democracy in these words: "To the backwoodsman democracy was no theorist's dream. It came stark and strong and full of life from the American forest."

Where the Settlers Came From — The polyglot character of the population of Indiana is shown in table 8 in the appendix, which gives the states and countries from which the settlers came and the nationalities represented. The steady growth, progress, and prosperity of Indiana are largely due to this commingling[1] of races and sections in which New England pilgrim, Pennsylvania German, Virginia cavalier, Carolina huguenot, hardy mountaineer, aggressive northerner, and militant southerner, have played a part—Americans all, but descendants, near or remote, from the finest stock of Europe.

For a detailed and highly interesting account of the settlement period, the reader is referred to Theodore Roosevelt's "Winning of the West" and Professor T. J. Turner's "Rise of the New West" from which this brief sketch has been largely gleaned.

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[1] Aley: "The Story of Indiana," pp. 129-130.

CHAPTER IV.

EARLY PIONEER PERIOD, 1800 - 1830

THREE TYPES OF PIONEERS—According to the accounts of early travelers there were three types of pioneers.[1] The first was the frontiersman who "squatted" on or preempted unsold land, built a log cabin, or perhaps a three-sided shack open to the south, made a small clearing, grew a little corn and a few vegetables, but subsisted largely on game. When another settled within five miles of his cabin, he began to feel crowded, sold out for $40 to $60, and moved farther out into the wilderness to repeat his experience. An English traveler mentions one person who had settled and removed eight times.[2] Pioneer No. 2 enlarged the clearing and size of fields, cultivated more crops, and made other minor improvements. But he too was a transient who would sell when opportunity came and move on in order to get, for his growing family, a larger piece of unimproved or slightly improved land. His successor "staked down" as a settled occupant and had his share in the improvement of the country.[3]

His Meager Equipment—The equipment of the pioneer farmer and of his home was very meager. The ax and the long-barreled rifle (the two most efficient tools), the hoe and the wooden mold-board plow, the brush harrow at first, and, later, the wooden-tooth "A" harrow, the sickle and the ox team, comprised the farming outfit. A like scantiness characterized the home. The housewife's equipment for making the coarse clothing and for cooking the food included the spinning wheel and loom and the cast-iron covered skillet or the "Dutch oven." The fireplace with its wide hearth, heavy back-log and blazing fagots, gave light and warmth on one side, and cooked the food which was hung over or placed beside the fire, set on the live coals, or buried in the hot ashes.

Early Agriculture Self-sufficient — Throughout the early years of the 19th century self-sufficient farming was the general rule. The few markets were remote from most of the settlers and nearly inaccessible except by the slow, circuitous river routes, as there were then no good roads. There was therefore slight inducement and little ability to produce more than enough food and fiber crops — and perhaps a little wool — to supply the simple needs of the family. The coarse homespun woven by the wife and the older girls, and the corn bread and vegetables, supplemented with venison, bear meat, and wild turkey, sufficed. During the earlier years of this period the progress was mostly in the gradual clearing of the forest, the fencing of the fields with rails split from the trunks of trees, the putting up of rude farm buildings, the slow increase in value of the land, and not in the accumulation of a bank deposit. If at the end of the year there was no unpaid doctor

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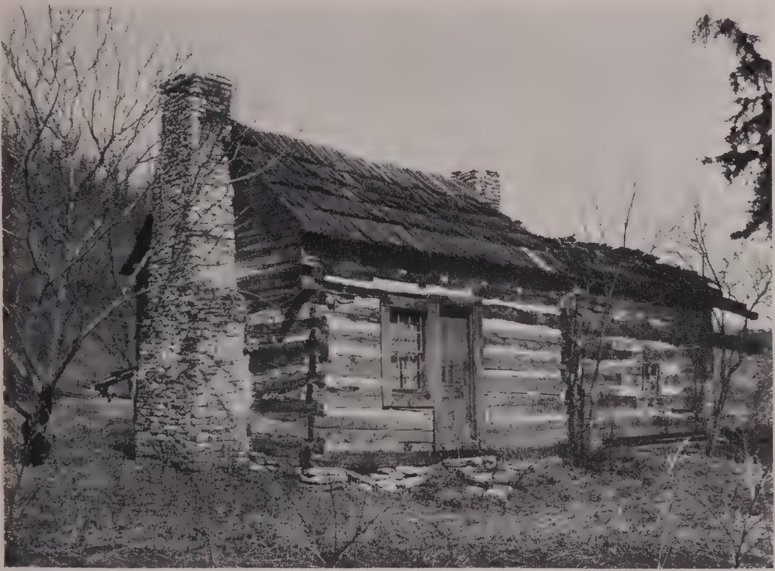
[1] "A Tour Through Indiana in 1840," Parsons, p. 74.

[2] Harlow Lindley: "Indiana as Seen by Early Travellers," p. 312.

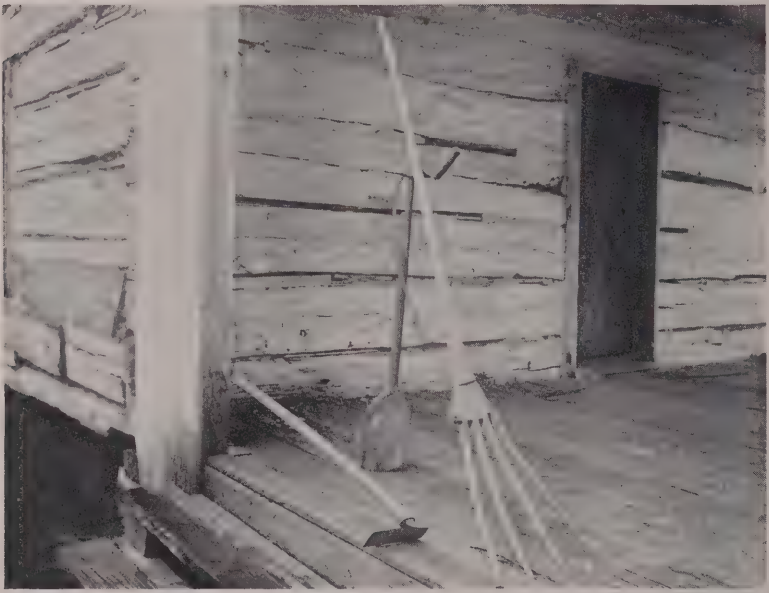
[3] Bidwell and Falconer: "History of Agriculture in the Northern United States," pp. 165-167.



An early log cabin in Franklin County. The log cabin was, of necessity, the first form of permanent dwelling, occupied by the early settlers. It was usually a one-room one-story structure with sometimes a low sleeping loft; but occasionally two-room and two-story cabins were built. The logs were usually round, though sometimes flattened by hewing the outer and inner sides. Lighter logs, placed horizontally and reaching from gable to gable supported the rived (split) oak clapboards, about thirty inches long, which were held down by poles. Such roofs usually kept out the rain, but the snow was often blown through. The floor was often the bare earth leveled and packed, but sometimes hewed slabs called puncheons were laid on sills bedded in the ground. At first there was no window other than a horizontal opening made by cutting out part of a log on one side in which was placed tough oiled paper to keep out mosquitoes in summer and cold in winter, and also to admit a dim light. At one end (sometimes at each end) there was a huge fireplace built of small boulders or flag stones and surmounted by a chimney of split sticks and clay mud. The earlier cabins were built and made secure from invasion, without a nail. When the cracks between the logs were well chinked and plastered with soft clay or lime and sand the cabins were very comfortable in both summer and winter. Some of these early cabins are still used as dwellings.

bill, the family might consider itself prosperous or at least fortunate.

Continuous Grain Growing — The area under cultivation was of course small at first and grew very gradually as the forest receded. Continuous grain growing — the same crop in succession at first, and later perhaps two crops in alternation — was the rule. Pastures, soil-renewing and forage crops, as such, were apparently not grown to any extent. As most of the stock ran at large in the woods throughout the year, practically nothing of the crop residues got back to the fields. The virgin soil, with its accumulated store of plant food, responded generously for a time to the indifferent cultivation of the period which David Thomas[1] (1816), and American pomologist and florist, considered wretched.



The heavy, clumsy iron hoe, the wood-tined fork and the wooden shovel were used early in last century. These tools are now in the agricultural museum on the Gibson County fair ground.—Courtesy of County Agricultural Agent, C. M. East.

Worn Land Abandoned — When decreased yields made it unprofitable longer to cultivate the older fields, they were abandoned for freshly cleared new ground, while weeds, briers, and bushes were permitted to effect a slow renewal of the worn land. Although crude and careless methods of farming were generally prevalent, the early travelers noted with approval the fine crops of the Swiss farmers in Switzerland County, of the Shakers near Vincennes, and of the Rappites in Posey County. The narratives of the early travelers show that most of the pioneers were engaged in farming and that the staple crops were grown; but there is very little additional information concerning the agricultural practices in Indiana during the early decades of the 19th century.

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[1] "Indiana as Seen by Early Travellers," pp. 46, 98, 200.

Indian Corn — Corn was the first and, for a time at least, the only grain crop. The Indian practice of hand planting and cultivation was closely followed at first by the whites as the hoe was the only tool for tilling the growing corn. A variation was noted by David Thomas[1] (1816) near Terre Haute: "The seed corn had been dropped in the third or fourth furrow when the land was plowed. The area under cultivation was necessarily small, practically limited to home needs." An exception to this general rule was noted by Edmund Dana[1] (1817) who reported that single farmers in the old settlement around Vincennes raised in one year 4000 to 10000 bushels of corn besides various kinds of small grain.

The Dutch oven of our pioneer mothers was a cast iron skillet with cover. When the raw food was placed in the skillet and covered, the utensil was buried in the hot coals of the open fireplace. The older people tell us that appetizing meals were thus prepared.—Courtesy of County Agent C. M. East.

From planting until harvest efforts were largely directed to scaring away birds, squirrels, deer, and other animal pests from the corn fields. For this purpose children were employed and various devices were used. One of these was the "horse fiddle" which consisted of a light frame, about 6 by 15 inches, which was rapidly revolved around a handle about 30 inches long. The part of the handle within the frame was about 2 inches in diameter and corrugated. An oak shingle or thin piece of springy board was so inserted in the frame that when revolved the end would strike in quick succession the corrugations or cogs of the handle and made a loud clapping noise that temporarily scared away the blackbirds which feasted in great numbers on the green ears of corn.

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[1] "Indiana as Seen by Early Travellers," pp. 46, 98, 200.

According to David Thomas[1] (1816) the army worm appeared twice in destructive numbers in 1816 in the vicinity of Terre Haute. The watchfulness required to protect the growing crop is inadequately expressed in the familiar jingle concerning planting:

"One for the blackbird, two for the crow;
One for the cutworm and two to grow."

The Indian expressed the same thought more laconically and more comprehensively, thus:

"If he come, he no come;
If he no come, he come."

He meant of course that if many pests came there would be no corn, but that if only a few came there would be at least some corn.

Harvesting the Corn — The laborious method of cutting and husking the corn was the rule throughout the pioneer period. In the earlier years stripping off the leaves and "topping"[2] (cutting off the stalk just above the ear) were common practices in some sections. This was done before the corn was fully ripe. The leaves were cured and the tops were put in small shocks to dry for winter feed.

In some cases the corn stalks were cut a few inches to a foot or more above the ground with a nearly straight or a hooked corn knife and shocked. In other cases the ears only were removed. Both practices are still prevalent. For the information of the younger boys and girls two forms of support for the shocked corn are here described. One was the "gallous," which was made by twisting together the upper part of two adjacent hills of corn with the two opposite hills of the adjacent corn row, making a substantial four-cornered permanent support for the corn shock. The other was a temporary support, which consisted of a small post three or four inches in diameter, four or five feet long, pointed at one end, with two holes bored through the other end at right angles to each other, and two slender sticks about 3 feet long which were pushed half their length through the auger holes. The pointed end of the post was forced vertically a few inches into the ground and, with the inserted sticks, extending out horizontally in four directions, formed a four-cornered support. When the shock was built around this support and securely tied, the sticks and post were removed and put in position for the next shock. The erect or cone-shaped, or the twisted shock of corn, as well as the clean or weedy field, distinguished then as now the tidy from the slovenly farmer.

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[1] "Indiana as Seen by Early Travelers," pp. 76 and 114.

[2] Stevens: "History of Washington County," p. 126.

The razor-back hog, once a denizen of Indiana, is still found on Honey Island, Louisiana, in the form shown above. The early woods hogs of Indiana—especially the males and the sows, when suckling pigs were fierce and dangerous fighters. Their chief merit was their ability, when fattened on beech mast and other nuts and a little corn, to travel many miles to market. As late as 1840 and even later an infusion of the blood of the semi-wild woods hog into the improved porker was demanded by some farmers for the above reason.—Photo furnished by Professor Marvin Hurley of the Department of Journalism, University of Arkansas.

The Husking Bee—The task of husking or shucking the corn was frequently lightened and enlivened by the "husking bee." When dry enough the ears were snapped from the stalks hauled near to the corn crib or stable and thrown together in a large pile. The neighbors, old and young, both men and women, were then invited to the husking bee. Sides were chosen by two leaders.[1] The center line was marked by a pole or rail supported just above the pile of ears. The husking then began, each side striving to reach the center first. The occasion was one of much merriment, followed in some sections by a bountiful supper, after which the young folks danced while their parents visited together.

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[1] "Log Cabin Days," by Ruth J. Bowlus, p. 130.

Wheat Growing—Wheat was doubtless not grown to any considerable extent until the advent of the grist mill, probably about 1816 in the American settlements. In 1796 Volney[1] reported that the French at Vincennes were growing wheat but in 1804 he noted the absence of wheat at Vincennes. The wheat was sown broadcast by hand on plowed ground in August or early September and "brushed in." After a few years the wooden-tooth "A" harrow supplanted the brush drag. Later, the single-shovel plow covered the wheat when broadcast in the corn stubble or in the standing corn.

Harvesting the Wheat—In the early pioneer period the sickle or reap-hook which had been used for centuries was the only small-grain harvesting tool, except that, where the grain was very short or badly lodged, a mowing scythe was sometimes used instead. The following is an early description of wheat harvesting in southeastern Indiana:[2]

"Twenty-five or more men would usually work together. There was first an early lunch of bread and butter, cold ham, sliced onions, and milk. Then an expert harvester would lead off, cutting a swath 3½ to 4 feet wide. When he had advanced a few feet, another would follow and so on, the more expert leading and the less experienced following. Feet, legs, and arms were dextrously used, with a gathering movement of the sickle held in the right hand. The heads of wheat were thus brought together for the left hand to grasp the slender stems below the heads. The cutting stroke quickly followed and the bunch of cut grain was laid down. The several successive movements were repeated in rhythmic order until the harvesters had cut their way across the field. The sickles were then twisted into the belts and the men worked back to the starting point, binding the cut grain into bundles as they came. Breakfast was served at eight o'clock, dinner at twelve, and a 'piece' with coffee at four, and a dram for the thirsty.

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[1] "Indiana as Seen by Early Travelers," pp. 18, 19.

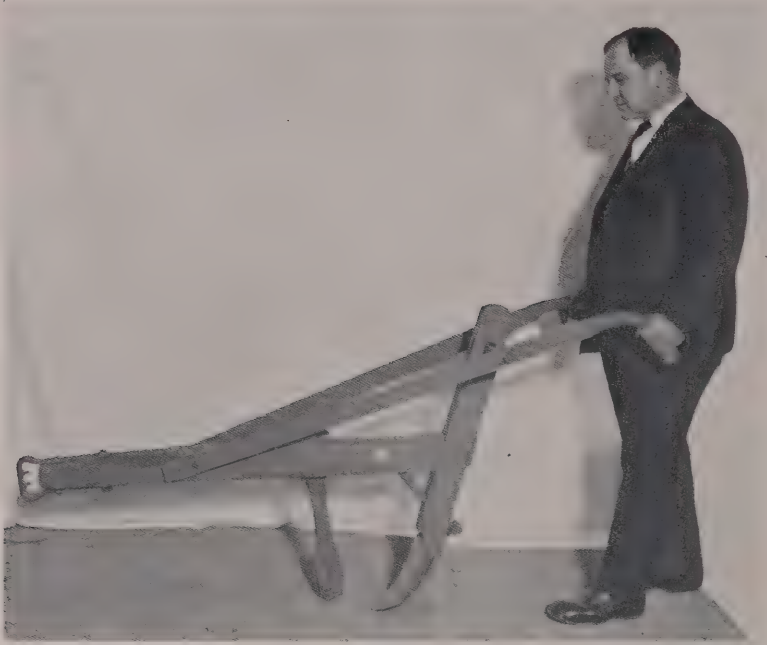
[2] "History of Dearborn, Ohio, and Switzerland Counties."

An expert harvester could cut about one acre of wheat a day, the average ranging from one half to three fourths of an acre. The harvester received 50 cents a day or an equivalent in harvested grain."

Threshing the Wheat—In the early pioneer period the primitive method of tramping out the grain with oxen or horses was used, or the more laborious hand method of beating out the grain with the flail. After the straw was removed the grain and chaff were thrown into the air when there was a brisk wind, which blew the latter away. Sometimes two men would wave a sheet to create a current of air that would carry the chaff away. A coarse hand riddle or sieve was also used to screen out the joints of the wheat stems and other material too heavy to be blown out.

Oxen were used by the pioneers chiefly for logging, plowing among the green roots of trees, and heavy hauling. Though slow moving, their quiet temperament, great strength, and willingness to pull their utmost again and again, made oxen preferable for the heavy work of the early pioneer period.—Photo furnished by J. C. Allen & Son.

Other Grains—Buckwheat, barley, oats, and rye were also grown in the early pioneer period. The methods of growing and harvesting these crops were practically the same as for wheat. Barley and rye were usually fall sown. With rare exceptions, oats has always been a spring-sown crop in Indiana. Buckwheat was sown in midsummer, that it might mature before the killing frosts. To hasten the drying, the cut buckwheat was not bound into sheaves. Instead, the heads of a rather small cluster of stalks were slightly twisted together so that the bunch stood erect with the butts spread apart to prevent toppling over and to hasten drying. When well cured the seed was flailed out over a layer of rails, there being a smooth hard surface or a sheet beneath to catch the grain.



The jumping shovel plow was used in the early pioneer period in plowing and cultivating new ground filled with the green roots of trees. In some forms of this implement the coulter met the point of the shovel which enabled it to jump over obstructions.—Photo by J. C. Allen & Son, courtesy of Dr. P. G. Moore, President of the Wabash County Historical Society.

Early Grasses and Clovers—Edmond Dana[1] (1816), speaks of the Barrens of Harrison county being overspread with a wild grass grateful to cattle and sheep and generally productive of corn, small grain, clover and timothy. David Thomas[2] (1816) mentions a timothy pasture and salivation of horses, due perhaps to the presence of white clover. William Darby[3] (1816) states that rye and oats were extensively grown, the former as a bread grain and for the distiller, and the latter for horses. Other travelers[1] inform us that where the natural prairie grass was closely pastured by cattle and sheep, blue grass and white clover sprang up.

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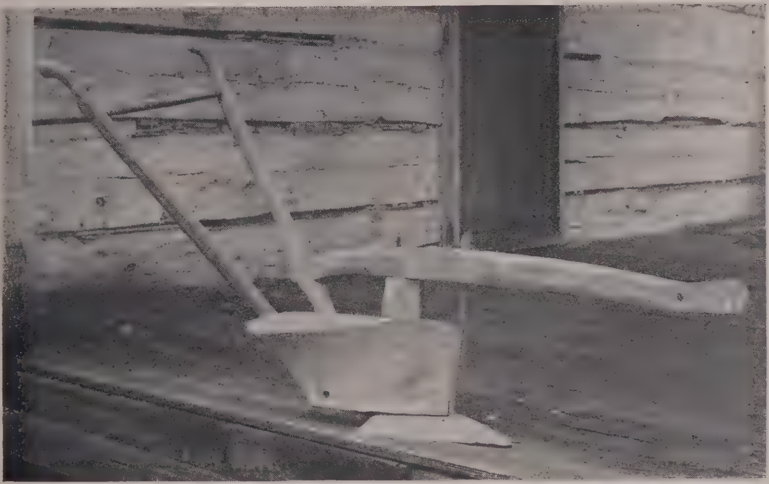
[1] "Indiana as Seen by Early Travelers," p. 208.

[2] Ibid, pp. 58, 97.

[3] "Indiana as Seen by Early Travelers," pp. 8, 9, 10, 195, 196, 446.

Potatoes—Irish and sweet potatoes were among the crops mentioned by early travelers in Indiana. However, as in the case of other products, there is little more than the statement that they were commonly grown.

Vegetables—Many of the early accounts use the general term "vegetables" to include the products of the garden. We are indebted, however, to some of the early travelers in Indiana for more specific statements. George Imlay[1] (1793) reported that turnips, potatoes, carrots, parsnips, cimbiline or squash, cucumbers, peas, beans, asparagus, cabbages, broccoli, celery, and salads were produced, and melons and herbs of every sort. William Darby[1] (1817) reported that "pompions (pumpkins) and a great variety of pulse" (beans, peas, and lentils) "are cultivated and may be produced in any assignable quantity."



The wooden moldboard plow doubtless came into use in Indiana very early in last century and was the chief breaking plow as late as 1835 or 1840. It was necessary to carry a paddle when using this type of plow, to scrape off the soil that would adhere to the moldboard. In some cases thin strips of metal were tacked to the moldboard to help it scour. The plow shown above is in the Gibson County agricultural museum.—Courtesy of County Agent C. M. East.

So many kinds of garden herbs (sometimes called "yerbs" or "yarbs" by the illiterate) must have been grown by our pioneer grandmothers for seasoning and flavoring foods and for medicinal purposes, that one is tempted to enumerate them. The writer, however, can do better by referring the reader to the charming story "Log Cabin Days"[1] by Ruth J. Bowlus.

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[1] "Indiana as Seen by Early Travelers," pp. 8, 9, 10, 195, 196, 446.

Many Fruits Cultivated — Cultivated fruits of several kinds were found growing in Indiana in the latter part of the 18th century. Thomas Hutchins[2] (1778) reported that "all European fruits—apples, peaches, pears, cherries, currants, gooseberries and melons thrive well both here (at Vincennes) and in the country bordering on the River Ohio." George Imlay[3] (1793) mentions the additional fruits, plums, strawberries, raspberries, and grapes.

Vineyards — In the first decade of the 19th century the culture of grapes on a large scale was begun by the Swiss peasants in Switzerland County and a few years later by the Rappites in Posey County. Timothy Flint[3] (1828) wrote concerning the former, "An hundred experiments have been since commenced in different points of the West; but this remains the largest vineyard in the United States." The two varieties of imported grapes grown by the Swiss Colony that were considered best, were the Cape of Good Hope and the Madeira. Flint surmised that native grapes might prove more satisfactory.

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[1] "Log Cabin Days," p: 138.

[2] "Indiana as Seen by Early Travelers," pp. 8, 9, 10, 195, 196, 446.

[3] "Indiana as Seen by Early Travelers," pp. 10, 442, 449.

CHAPTER V.

EARLY PIONEER PERIOD (Continued)

ORCHARDS—David Thomas[1] (1816) saw large five-year-old cherry trees in Ohio County and was there treated to ripe Morello cherries in June. He saw also in the same year a fine young orchard of grafted apple trees at Shakertown about 18 miles north of Vincennes. The nursery of the Shakers was considered one of the best in the country. William Forster[1] (1821) reported of south central Indiana that peach trees grew with astonishing rapidity and bore fruit in three years. Karl Bernhard[1] (1825) reported that the orchards planted by Rapp at Harmony (later New Harmony) were "large and very handsome." Charles F. Coffin[1] in his personal reminiscences of Wayne County (1824-1833) observed that orchards had been planted and in many places were bearing fine crops of fruit, especially apples.

Fiber Crops—Flax was grown by most of the early pioneers. Cotton yielding 150 pounds per acre, was produced in southern Indiana and rather extensively on the warm soils around Vincennes, Princeton, and New Harmony.[1] Wild hemp grew luxuriantly on the rich bottoms of the lower Wabash, but it was also cultivated. These crops were grown chiefly for home consumption. From their fibers, flax, hempen, and cotton cloths were made in the homes. Where wool was available it was mixed with flax to form the home-made "linsey-woolsey". Cotton cloth from Indiana cotton was also manufactured in the cotton mills at Vincennes and Harmony.

Tobacco—According to the accounts of early travelers tobacco was grown at a number of points in southern Indiana, a superior quality being produced at Vincennes and Brookville.[2] It was grown as far north as Wayne County. Imlay[2] (1793), a Captain in the American Revolutionary Army, remarked that tobacco would grow north of 40 degrees latitude, but that a better quality was produced farther south. He considered the whole of the Ohio and Mississippi country south of latitude 40 degrees, well adapted to large production of tobacco, but he also noted its ill effects in the following language: "It is certain no cultivation is so pernicious to the soil, and of so little advantage to the cultivator. It continually impoverishes the land; and every additional season, instead of producing riches to an estate, tends to beggar it: * * * no soil but one as prolific as that of the Nile, would be capable of producing it for any length of time, according to the system which has been pursued in Virginia and Maryland."

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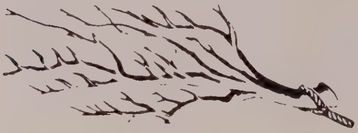
[1] "Indiana as Seen by Early Travelers," pp. 72, 266, 429, 534.
[2] Ibid, pp. 8, 11, 151, 154.



The brush drag was used, in the early years of the nineteenth century, in "brushing in" the small grain which was sown broadcast by hand on the plowed ground.—Courtesy International Harvester Company.

Honey, Sugar and Salt—The forest not only furnished game of many kinds, but it also yielded sweets to the pioneer farmer. The honey-bee (called by the Indians "White man's flies"), that must have come with the immigrant, hoarded in hollow trees and clefts of rocks its rich stores which the pioneer was not slow to appropriate. The sugar maple—and sometimes also the soft maple—was "tapped" in early spring to catch the sweet water which was boiled down (at first in iron kettles) to make molasses and sugar. If the trees were soon to be deadened, the tapping was done by cutting with the axe, sloping notches in the trunks about two feet from the ground. Just below the lower end of the notch a curved chisel, called a gouge, was driven, with a slight upward incline, one-half to three-fourths of an inch into the tree. Into this incision a curved split spile about a foot long and properly pointed was driven, to carry out the sap so that it would drop into a wooden trough about two feet long and one foot wide hollowed out from one half of a split cherry or ash log.[a] The other method of tapping by boring is still followed and needs no further elaboration than the statement that at first hollow spiles from the stems of the elder bush were used. In some cases the high cost of salt[1] and the urgent need of it caused the pioneers to go in groups, (for self-protection), many miles to a salt spring and boil down its waters to obtain the year's supply.[1]

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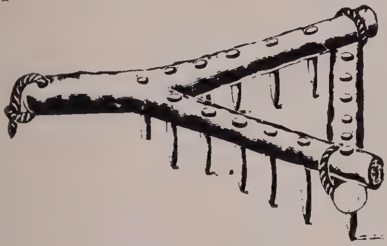
[1] "Indiana as Seen by Early Travelers," p. 104.

[a] A large type of gourd was used in Monroe County and probably elsewhere to catch the sap of the maple tree.

Livestock—The livestock of the early pioneer period was very indifferent. The immigrants brought with them what they had and it was poor enough. The practice of allowing the stock to run at large throughout the year (work animals sometimes excepted), shelterless and foraging largely for themselves, resulted inevitably in further deterioration in size and quality. Springtime especially after a hard winter, found many of the animals in a famished and weakened condition and the less vigorous often died of sheer starvation and exposure.



The wood-tooth "A" harrow, similar to the one here shown, soon supplanted the brush drag. At first it was made from the natural fork of a tree. Later iron teeth replaced those of wood and still later the double "A" hinged harrow replaced to some extent the earlier form. The "A" harrow was prefered for use in stumpy ground.—Courtesy International Harvester Company.

Hogs Thrived—The hog was the single exception. Swine found an abundance of food in beech mast and other nuts and in succulent roots. Hogs multiplied rapidly and quickly adapted themselves to their wild surroundings. Wolves sometimes killed young pigs but the mature hogs, especially the males, were formidable antagonists. They sometimes became so vicious and dangerous that, in squads, they would even attack and kill a bear.[2] It is said that these semi-wild hogs would shake down blacksnakes from bushes, spring upon rattlesnakes, and kill and eat these reptiles with impunity. These long-snouted, long-legged, slab-sided, razor-backed, and altogether sorry-looking specimens attained their growth at two or two and one-half years on forest products, which, when abundant, put them in condition for market. Sometimes, after being finished on corn a few weeks before Christmas, they weighed 200 to 250 pounds.[3] Hogs were driven to Cincinnati in droves of 2000 to 3000, 10 days to two weeks being required to make this trip from the vicinity of Greensburg.[4]

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[1] "Log Cabin Days," p. 89.

[2] "Cockrum: "Pioneer History of Indiana," pp. 492, 493.

[3] "History of Agriculture in the Northern United States," pp. 436-7, 441.

[4] Parsons: "A Tour Through Indiana in 1840," p. 90.

Sheep—Morris Birkbeck,[1] an English farmer who visited the Ohio Valley in 1817 and finally settled in southern Illinois, expressed surprise at the mania for fine-wool sheep which many farmers, especially in Kentucky, were attempting to raise. His dictum that "deep woods are not the proper abodes of sheep" seems to have been generally accepted by the early Indiana pioneers. Shakertown, near Vincennes, and Harmony are the only points where early travelers noted large flocks of sheep.

Work Animals—For heavy draft, such as drawing logs together to be burned or sawed, and plowing among the stumps and green roots, oxen were preferred. Horses were used for pack animals and for traveling, which for a time was almost wholly on horseback.

The primitive sickle and flail were the first harvesting and threshing implements used in Indiana. The sickle gave way to the grain cradle about 1825, and tramping out the grain with oxen or horses largely supplanted the flail by 1825. However, the flail was used much later in threshing small patches of buckwheat.—Reproduced from Bidwell and Falconer's "*History of Agriculture in the Northern United States,*" by permission of the Carnegie Institute.

Cattle—Thomas S. Teas (1821) noted the luxuriant grass in the bottoms of St. Mary's river and stated: "There are some as fine looking cattle here as I ever saw."[2] Thomas Hutchins (1778) saw fine horses, swine, and "black cattle" at Vincennes but gives no further description.[3]

The brief accounts that the writer has seen indicate that the cattle in general were of no particular breed but a nondescript or so-called "penny royal" type, small, ill-shaped, and slow maturing. Bidwell and Falconer state that the cattle of the Ohio Valley in 1840 commonly weighed from 500 to 700 pounds at 4 years of age.[1]

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[1] Lindley: "Indiana as Seen by Early Travelers," p. 175.
[2] Ibid, p. 252.
[3] Ibid, p. 8.

Horses—According to Hutchins (1778), there was at Vincennes "a fine breed of horses" which had originally come from the Spanish settlement west of the Mississippi.[2] He gives no further description. Horses received scant mention by the early tourists whose accounts are included in Harlow Lindley's interesting volume, "Indiana as Seen by Early Travelers". The writer has seen no mention of any attempt in Indiana at improvement of live stock, by either breeding or selection, prior to 1840.

Poultry—In Lindley's "Indiana as Seen by Early Travelers" and Thwaite's "Early Western Travels", poultry is incidentally mentioned in lists of live stock kept by the early pioneers in prices of poultry and eggs, and in bills of fare at the early taverns. Owing to their small cost and ability to shift for themselves and endure neglect, it is highly probable that practically every farm had poultry of some kind. They were sometimes called barn-yard or dung-hill fowls, which shows that they were often scavengers. They foraged well, as the clipped condition of the growing wheat and oats or rye within their range clearly proved.

Mills—Next in demand to shelter, food, and water, were mills. Various crude hand and horse mills were soon constructed in which the corn was pounded or ground into coarse meal. Horse mills were common in Knox county as late as 1816.[3] Mill sites were early located on the streams and grist and saw mills erected thereon.[4] There were floating mills on the Ohio River, the current being the driving power.[5] A bag of corn or wheat was carried on horseback sometimes 50 to 60 miles to be ground. Often there was a wait of two or more days for the grist. For interesting accounts of early mills and the risks, adventures, and harrowing experiences in going to mill, the reader is referred to Cockrum's "Pioneer History of Indiana", Lindley's "Indiana as Seen by Early Travelers", and other state and county histories.

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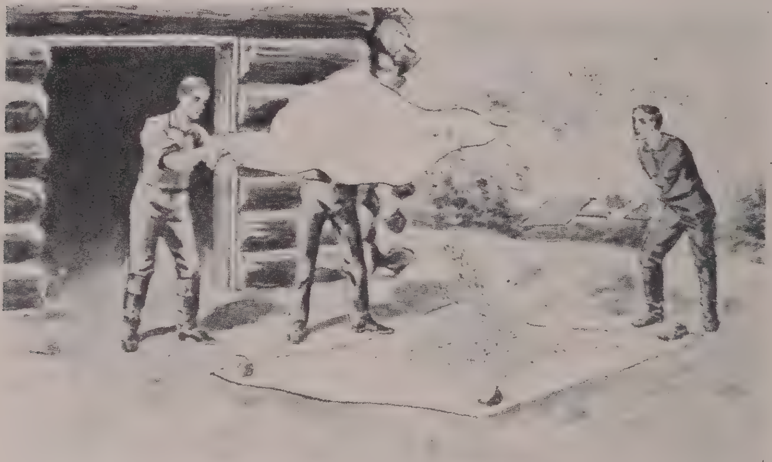
[1] "History of Agriculture in the Northern United States," p. 401.
[2] "Indiana as Seen by Early Travelers," p. 8.
[3] Ibid, p. 146.
[4] "Indiana as Seen by Early Travelers," p. 202.
[5] Bogart, "Economic History of American Agriculture," pp. 59-61.
[5] Ohio Experiment Station Bulletin No. 326, pp. 52-3.
[5] "Indiana as Seen by Early Travelers," p. 42.

Markets—There was practically no market for the products of the earlier pioneers except that furnished by the later comers who were glad to buy of those who had a surplus. According to John Melish,[1] Indiana had little external trade prior to 1810. What little there was went down the rivers in flat boats to New Orleans. As the semi-wild hogs were good travelers and could be driven many miles over the rough trails, they were the first farm product to reach the commercial markets at Cincinnati, Madison, and Louisville.



Fanning away the chaff with a sheet was resorted to when there was no breeze. This practice was superceded by the fanning mill in the early thirties of last century and, still later, by the advent of the combined thresher and separator.—Reproduced by J. C. Allen from *"Stories of Pioneer Life"* by Florence Bass, by permission of D. C. Heath and Company.

Flat Boat Trading South—Soon after 1807 New Orleans became the leading market for the Ohio Valley. From points on the Ohio, Wabash, and White rivers, flatboats carried wheat flour, beef, pork, hides, furs, whiskey, and other products to New Orleans, where both cargo and flatboat were sold. The return trip was nearly always made by land and on foot. Occasionally a flatboat carrying textile fabrics, wines, and metal goods was propelled up stream by poling and "warping".

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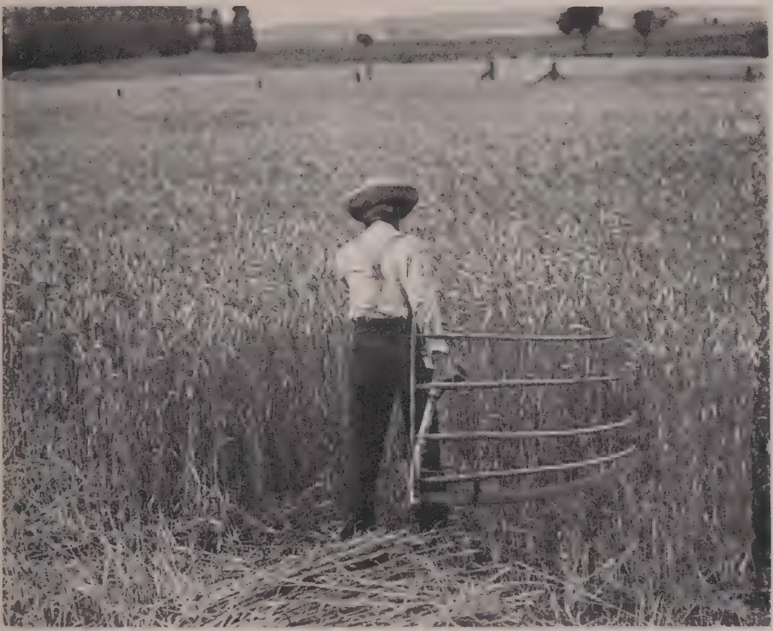
[1] "Indiana as Seen by Early Travelers," p. 33.

Factors Affecting Prices — Prices fluctuated widely in different years and in different sections, the governing factors being market demand, distance from market, transportation facilities and costs, and volume of products. For example the cost of transportation of small shipments would often be more than the prices at commercial centers, and increased production, that would make large shipments and economical transportation possible, must wait for the gradual clearing away of the dense forest. The earlier pioneers, therefore, could sell their small surplus only to the incoming immigrants, who in turn might realize a small income by supplying the needs of others who came still later.

The following summary gives a fair idea of the range in prices of land and of farm products in the first quarter of the 19th century:



Cradling wheat in Clinton County, Indiana. The grain cradle supplanted the sickle about 1825. It was the principal harvesting implement for a quarter of a century. In fact it is still used on stumpy and very broken land.—Photo by J. C. Allen & Son.

Land Prices — Discouraged French settlers in 1794 sold, for as little as 30 cents an acre, their lands which, four years later, were resold at $2.00 an acre.[1] In 1805 land in Switzerland county sold for $2.00 an acre.[1] In 1816 government land between the Wabash and White rivers was auctioned off at $4.00 to $30.00 an acre.[1] Land in this tract not thus disposed of was sold at $2.00 an acre. In 1816 partially improved land in southern Indiana was rated at $12.00 an acre.[1] In 1817 small farms, in locations not stated, of 15 to 20 acres with log cabins were selling at $8.00 to $10.00 an acre. The same year, land of "first quality" around Hindoostan, an early village of Martin county which has since disappeared, could be bought for $2.50 to $5.00 an acre.[1]

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[1] "Indiana as Seen by Early Travelers," pp. 59, 161, 168, 230, 231, 237.

Prices of Products—In 1816, 1817, and 1818 farm products were selling at the following prices:

Prices of Farm Products—1816-17

Brookville, 1816[2]		*Brookville, 1817*[2]	
Wheat	$0.75 bu.	Wheat	$0.62 bu.
Corn	.25 "	Corn	.25 "
Oats	.25 "	Fowls per doz.	1.00
Rye	.40 "	Eggs per doz.	.06½
Beef, per lb.	.03½	Beef per lb.	4 to 5c
Pork, per lb.	.04	Pork per lb.	3 to 4c
		Butter per lb.	19c

The price of salt, a prime necessity, ranged from $1.50 to $3.50 a bushel of 50 pounds, and from $5.00 to $10.00 a barrel. At one time of great scarcity the price of salt rose to $15.00 a barrel.[2]

Prices of Farm Products—1817-18

Princeton, 1817[2]	*Fort Harrison, 1817*[2]	
Wheat, 1s. 4d. bu.	Wheat	$0.75 bu.
Corn, 11d. bu.	Corn	.25 bu.
Flour, 36s. per bbl.	Beef	.04 lb.
Hay, 35s. per ton	Pork	.04 lb.
Eggs ½d. each	Honey, gal.	.50
Butter, 6d. per lb.	Maple Sugar	.25 lb.
Good cow, $12 to $20	Butter	.12½ to .25 lb.
Two year old heifer, $6	Cheese	.12½ to .25 lb.
Ewe and sow, $3 each		

Vincennes, 1818[2]	
Wheat	$1.00 bu.
Corn	.50 "
Beef, 3c to 4c lb.	
Pork, 4½c lb.	
Potatoes, 37½c to 50c bu.	

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[1] "Indiana as Seen by Early Travelers," pp. 59, 161, 168, 230, 231, 237.

[2] "Indiana as Seen by Early Travelers," pp. 103, 104, 146, 151, 231.

Parsons gives prices in 1840 as follows:[1]

At Logansport in June: beef, 3 cents; pork, 2 cents; lard, 5 cents; butter, 8 cents; cheese, 10 cents; ham, 6 cents; shoulder, 5 cents; flour, $3.00 a barrel; wheat, 56 cents; oats, 12 cents; coffee, 25 cents a pound; whiskey, 19 cents a gallon. At Terre Haute in July: flour, $3.75 a barrel; meal, 12 and 15 cents a bushel; wheat, 50 cents; potatoes, 10 and 12 cents; butter, 5 and 6 cents a pound; eggs, 3 and 6 cents a dozen; whiskey, 14 cents a gallon.

According to local histories wheat sometimes sold for 25 cents a bushel and corn ranged from 6 cents to $1.50 a bushel. Some of the early pioneers preferred hunting and trapping to farming. Since there was a good demand for furs and peltries, they could often make more money with less labor by the chase.

So long as the farm could supply practically all the needs of the family, low prices of farm products were not a matter of great concern. The pinch came when the farmer found it necessary to buy groceries, dry goods, and other things that he could not make from the raw materials of the farm. Few price quotations are available, but dry goods were said to be exorbitantly high. The following figures will serve, however, to show the disparity in prices of farm and commercial products. With corn at 6c a bushel to $1.50 when very scarce, wheat at 25c to $1.00 a bushel, potatoes at 37½ to 50 cents, cattle at $10 to $20 a head, hogs at $3 to $5, and fowls at 43½ cents to $1.00 a dozen, when Indiana became a state, the farmer had to pay, for purchased articles, the following prices:

Prices for Groceries, Etc.—1816-1818[2]

Coffee	per pound		37½ to 50 cents
New Orleans sugar	" "		25 "
Loaf sugar	" "	(on Ohio River)	37½"
Loaf sugar	" "	(at Vincennes)	50 "
Young Hyson tea	" "		$1.50
Iron	" "	retail	16 "
Muslin	per yard		50 "
Calico	" "		37½"

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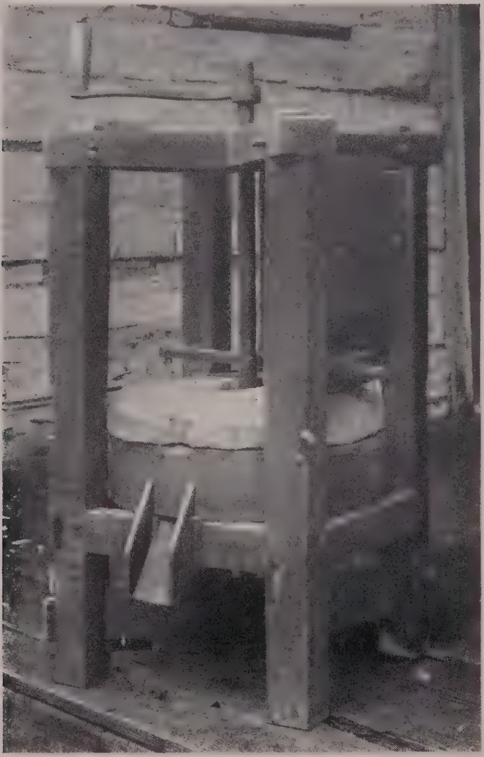
[1] "A Tour Through Indiana in 1840," pp. 220, 321-322.

[2] "Indiana as Seen by Early Travelers," p. 103.

The disparity noted above was fully as great if not greater between commercial prices and farm wages at $10 to $12 a month or 37½ cents to $1.00 a day.

The Hardy Pioneer—The foregoing brief and necessarily incomplete sketch of Indiana agriculture in the first quarter of the 19th century, conveys no clear idea of the real and sometimes thrilling drama of its early growth and development. What of the actors in this drama? They were predominantly robust, hopeful, and brave. No others would venture, of if they did, a taste was sufficient and they turned back, a timely warning to others like themselves. Many if not most of the early settlers were young married people who came with the dual purpose of carving a home out of the wilderness and of rearing a family therein.

It would indeed be a pleasant task gratefully to recount the experiences, amusing, sad, joyous, heartening, discouraging,



Hand mill with buhrstones, for grinding grain. Great strength was required to turn it. The mill here shown is in the Gibson county agricultural museum.—Courtesy of County Agent C. M. East.

of the 19th century conveys no clear idea of the real and satisfying, disappointing, pathetic, hazardous, frightful, tragic, of the early pioneer farmers. It would be even more pleasant to pay loving tribute to their hopefulness, faith, courage, endurance, and their unremitting, arduous labors which have transformed the unbroken forest, the pestilential swamp, and the abode of savage man and beast into the peaceful, salubrious, fruitful, prosperous, and beautiful Indiana of today. This, however, is not strictly germane to agriculture; and besides the story has been well told by others, making repetition unnecessary. Nevertheless, the writer, in closing this chapter, cannot forbear quoting in part, the tribute of John T. Moses to the pioneer mother:[1]

A Tribute Deserved—"She cooked at an open fireplace, stooping at most of the work, with her head exposed to the heat. She made the soap, hackled the flax, carded the wool, spun and dyed the yarn, wove the cloth, cut and made the family clothing; and blankets, sheets and towels were the products of her industry and skill. She gathered herbs and was the family doctor. She bore and reared the children. With all these manifold duties, she found time to help out with the corn planting and hoeing. Her willing hands were ever busy with acts of neighborly kindness. She sat by the sick bed and comforted the troubled. Her womanly virtues and graces gave the hard life of that time such refinement as it had. She was the best of the church and she taught her daughters to be modest and home keepers, and her sons to be good men. With brave heart she toiled through her allotted years, then slipped away into some little grave-yard to rest. It may be that its fences have long since rotted down and the cattle trampled her grave or the plow goes over it today, but on that day when the Book of Remembrance is opened, she will come forth to her reward."

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[1] "Historical Sketch of Rush County," p. 17 in Atlas and Directory of the County, 1908.

CHAPTER VI.

THE LATER PIONEER PERIOD: 1830 - 1860

DEFINITE Transition Periods Arbitrary—Man's division of human progress into distinct periods is largely arbitrary. While it is true that men and institutions effect epochal changes that in the retrospect stand out in bold relief, it is equally true that the transition from one stage of advancement to another is usually so gradual as to leave no distinct line of demarkation.

Pioneer Methods Prevailed—The agriculture of Indiana from 1830 to 1860 is here considered the later pioneer period because the prevailing attitude and practice of the farmers regarding the use and care of the soil were much the same as in the first thirty years of the century.

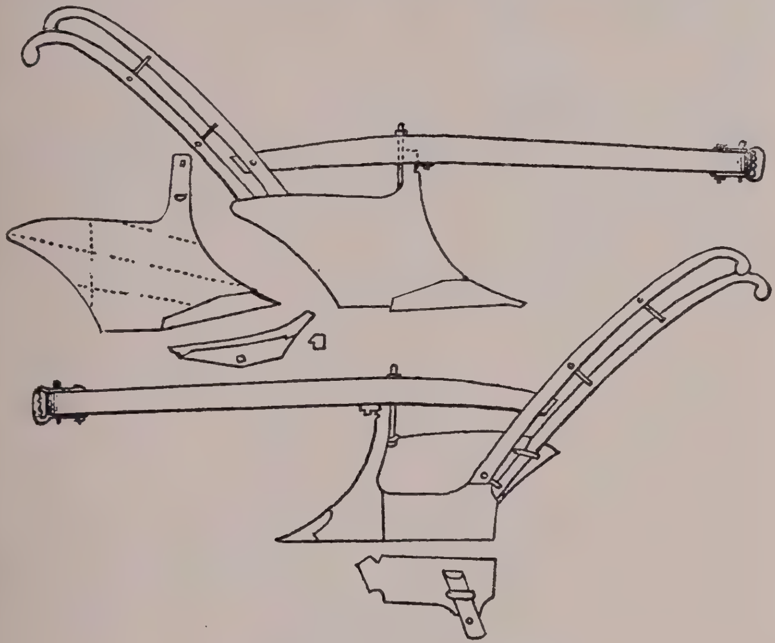
Mining Soil Fertility—Throughout the first half of the 19th century and even later, unconscious or at least unintentional, soil exploitation or soil mining was practically universal throughout the state. Soil renewal evidently received little thought and less effort. If there were exceptions, they served, chiefly by contrast, to emphasize the general rule.

Soil Depletion Accelerated—With the growing volume of production, soil impoverishment was accelerated. At first, worn fields could be left to undergo a slow natural renewal while freshly-cleared new ground was available, but as the area of virgin soil grew less, more constant cropping became the rule, varied only by the occasional resting of a field during one season, called summer fallowing.

Deeper Tillage—With the advent into Indiana of the cast-iron plow about 1830, the steel and the subsoil plow a decade or two later, and the chilled plow in 1855, deeper and more thorough tillage was employed to maintain crop yields.

Gullied Hillsides—The ill effects of pioneer farming became increasingly manifest on the older farms of the state, but were most strikingly shown on the hill lands of southern Indiana. The constant cultivation of the hillsides resulted in soil erosion until the steeper slopes were frequently gashed into gullies and abandoned.

Early Soil Mining Excusable—With the exception of the constant cultivation of the steep hillsides, which can be condoned only on the ground of ignorance of the causes and effects of soil erosion, the pioneer methods of farming, though crude and wasteful, were practically inevitable and doubtless economically sound. As land was abundant and cheap, nearly everyone invested in it. Farm labor was therefore scarce and relatively high-priced. Commercial fertilizers were not available. With the farm animals running at large, the supply of barn yard manure was entirely inadequate. The need of growing the grain crops which could be most economically marketed was urgent. The cultivated hay and pasture grasses were not yet generally introduced. Then, too, hay and other forage crops were too cheap and too bulky to pay the cost of transportation to market over the bad roads, and could not be profitably utilized in feeding to the indifferent and slow-maturing cattle of the average farmer.

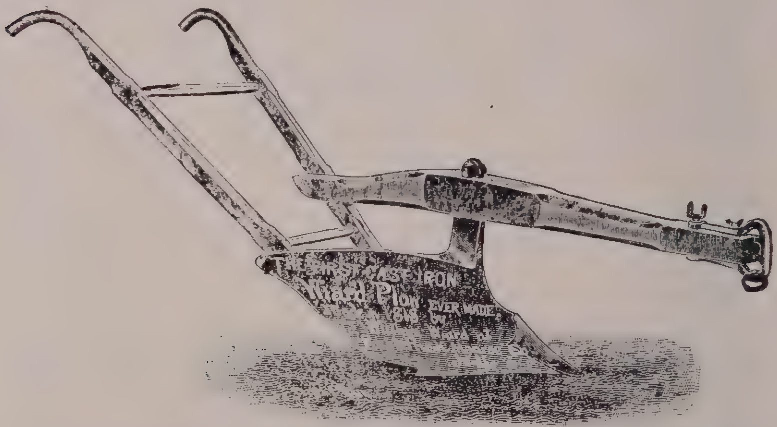


Jethro Wood's plow, 1819.

The first cast iron plow with replaceable parts. It was patented by Jethro Wood of Scipio, New York, 1814-1819.—Reproduced by J. C. Allen & Son, from Bidwell and Falconer's "*History of Agriculture in the Northern United States*" by courtesy of the Carnegie Institute.

Grain Growing Predominant—Under the above-named conditions it was natural, if not absolutely necessary, that the rank and file of the pioneer farmers should engage in grain growing and broad farming. The aim was to get the maximum return from the soil with a minimum of labor and outlay. The commonly accepted agricultural tenet of the later pioneer period was not how many bushels to the acre, but how many acres of corn and wheat could be grown with the available means.

The tendency in this period to spread out over many acres with indifferent cultivation is shown in the 1851 report of the secretary of the Tippecanoe County Agricultural Society:[1] "This implement (shovel plow or 'go-devil'), a perfect destroyer of both weed and corn, is used almost exclusively throughout the country, sometimes unquestionably doing great injury to the crop (corn). * * * The most prominent defect in conducting farming operations in our county is * * * to cultivate too much land * * *. It is nothing unusual in many districts to find farms almost overgrown with weeds in consequence of bad tillage. * * * Subject any ground to the regular western rotation, i.e., first year corn; second year corn and weeds; third year weeds and corn; fourth year weeds, and we will soon have an unmanageable farm."



This picture represents the first cast iron plow made in 1818 by William Wiard of Batavia, New York. It is not known that this plow came into Indiana, but cast iron plows similar to this were introduced into the state about 1835 or 1840.—Courtesy of the Wiard Plow Company.

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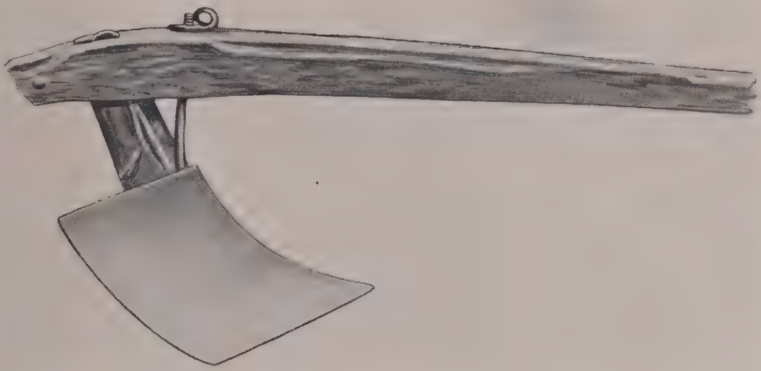
[1] Report of Indiana State Board of Agriculture for 1851, pp. 195-214.

With the foregoing preliminary statement, let us trace, as well as our available sources of information will permit, the development of Indiana agriculture through the later pioneer period.

Farm Products South Bound—The movement of farm products down the Ohio and Mississippi rivers in flatboats, which began about 1810, was in full swing by 1825. According to Esarey,[2] from 1820 to 1840 nine-tenths of the surplus produce of the state floated down the river in flatboats, about 300 of which left the Wabash each year.



This picture shows what is left of the first steel plow, hand made in 1837 by John Deere, later head of the John Deere Plow Company, Moline, Illinois. As cast iron plows would not scour well in prairie and silty loam soils they gave way to steel plows in the forties of last century.—Courtesy of John Deere Company.

Increasing Production—With the area under cultivation gradually growing, the volume of production steadily increased. New starting points of shipments sprang up along the tributaries of the Ohio and Wabash rivers. Flatboats were built many miles up from the mouths of these smaller streams, ready to be launched and loaded at the time of the spring freshet. The staple products shipped out included wheat, flour, beef, pork, hides, tallow, lard, whiskey, livestock, etc. Corn was also shipped in some amount, but it was more commonly converted into the concentrated and higher-priced products—beef, pork, and whiskey.

New Orleans an Uncertain Market—For several reasons the New Orleans market proved unsatisfactory. Only those farmers who lived near the boat landings could economically haul their bulky field products to the flatboats; three months were required for the round trip, which debarred most of the farmers from being their own shippers; the boats must start about the same time—in March when the smaller streams were full. This caused a glut on arrival at New Orleans whose warehouse capacity was insufficient; the Spanish Government at New Orleans often placed annoying restrictions upon trade; the return trip was expensive by steamboat, possible after 1816,[1] and slow, wearisome and often hazardous on foot, as the route was infested by robbers in numbers sufficient, at times, to overpower the returning boatmen; the financial returns were often small and sometimes actual losses were incurred.

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[2] "History of Indiana," Vol. I, pp. 269-271.

Highways Desired—Under such conditions the farmers keenly realized the need of good roads that would give them access to other and nearer markets. The legislators, who had to go over, often through, the mud[2] and corduroy[3] roads to the State Capitol, understood and appreciated this need, but the great cost of highway improvement delayed decisive legislative action. However, from 1818 to 1840, according to Esarey,[4] the General Assembly was much concerned with measures for badly-needed highway improvement.

Congressional Encouragement—Congress took the lead by donating public lands in 1827 to aid in the construction of canals in Indiana.[5] Thus encouraged by Congress and because of the increasingly insistent and general demand for better roads, the State Legislature in 1836 and later, under the sanction of Governor Noble and with widespread popular approval, voted appropriations aggregating $13,000,000 for no less than eight internal improvements, including a network of canals and railroads, or turnpikes as circumstances might dictate.[6] These several improvements, colossal in the aggregate, which were undertaken almost simultaneously under state control, swamped the treasury and came perilously near destroying Indiana's financial credit. The gigantic undertaking failed as a state enterprise, but several of the improvements were later completed under contract with private companies. For a detailed account of the state's early venture in highway improvement, the reader is referred to the several histories of Indiana.

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[1] Bogart: "Economic History of American Agriculture," p. 59.

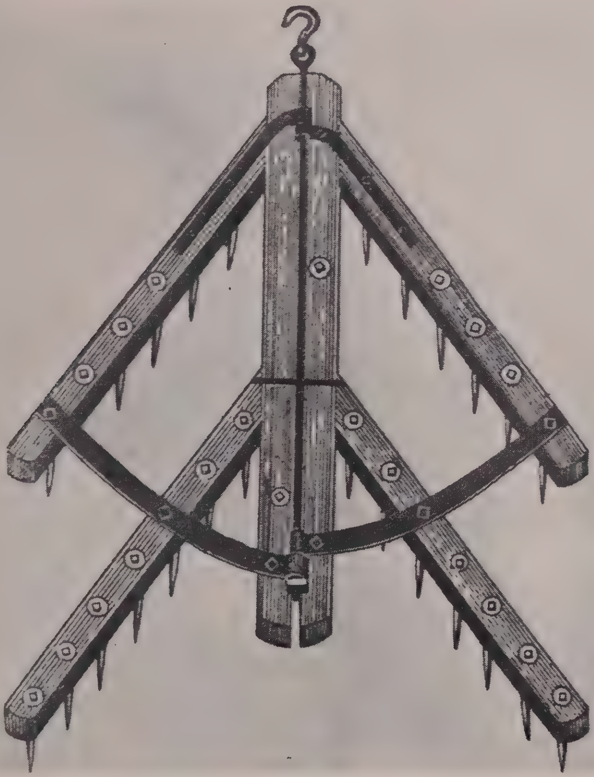
[2] Parsons: "A Tour Through Indiana in 1840," pp. 89, 287-289.

[3] Some experienced traveler over corduroy remarked: "Seeing is believing, but feeling is the naked truth."

[4] "History of Indiana," Vol. I, pp. 254-260.

[5] Ibid, Vol. I, pp. 255-260.

[6] Ibid, Vol. I, p. 363.

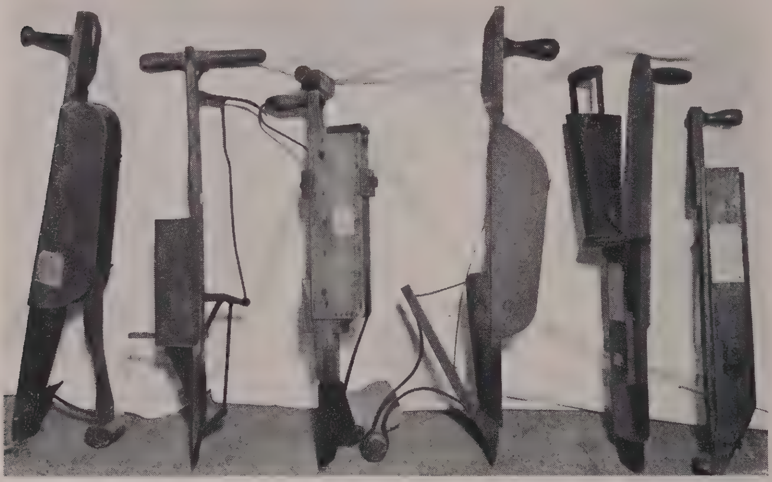


The "double A" harrow came into use in Indiana about 1860 or 1865. Its chief advantages over the single "A" form are that only one-half need be lifted in passing over or by an obstruction, and the better pulverizing of the soil.—Reproduced by J. C. Allen & Son, from Bidwell and Falconer's "*History of Agriculture in the Northern United States*" by courtesy of the Carnegie Institute.

New Lines of Transportation — With the opening of new highways including the National Road passing through Richmond and Indianapolis to Terre Haute, the Whitewater, and the Wabash and Erie canals, and the railroad from Madison to Indianapolis, the volume of immigration increased, freight rates were reduced, new markets on the Ohio, inland, and in the East, became accessible, and thus a fresh impetus was given to agricultural production.

Further Soil Depletion — The net result on the soil of these highway improvements was an accelerated drain on available plant food, the burden of restoring which was left to the farmers of the late decades of the 19th century and their successors. For more than 75 years of soil mining the pioneer farmers of Indiana are not to be held up as a lone example of improvident agriculture. They were doing no worse and no better than the pioneer farmers of the older and newer commonwealths. They were what they were because of example, tradition, and force of circumstances, under which they lived and accomplished the Herculean task of redeeming the state from its condition of pristine wilderness.

Staple Crops — The staple crops of the present time were then being increasingly produced. Corn led, followed by wheat, oats, buckwheat, rye, and barley. Clover and grass were then not extensively grown in the state.



Types of hand corn planters which were used in Indiana about the middle of last century. Those here shown are in the Miami County Agricultural Museum.—Courtesy of H. C. Phelps, founder of the museum.

The following figures of the U. S. Census Reports, partly arranged by Bidwell and Falconer,[1] show in round numbers, the total and per capita production of various crops in Indiana for three decades and the percentage of the U. S. total for each crop:

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[1] "History of Agriculture in the Northern United States," pp. 321-386.

Field and Forest Products in Indiana

	1840			1850			1860		
Crop	Total (1000 bu.)	Per capita bu.	Per cent U.S. Total	Total (1000 bu.)	Per capita bu.	Per cent U.S. Total	Total (1000 bu.)	Per capita bu.	Per cent U.S. Total
Corn	28,156	41.1	7.5	52,964	53.6	8.9	71,589	53.0	8.5
Wheat	4,040	5.9	4.8	6,214	6.3	6.2	16,848	12.5	9.7
Oats	5,982	8.7	4.9	5,655	5.7	3.9	5,318	3.9	3.1
Buckwheat	49	.07	.7	150	.15	1.7	397	.29	2.3
Rye	130		.7	79	.08	.6	463	.34	2.2
Barley	28		.7	46	.05	.9	382	.28	2.4
Flax Seed				37		6.6	119		21.1
Clover Seed				18		3.9	61		6.3
Grass Seed				12		2.8	35		3.8
[1]Hay—1000 tons	178		1.7	403		2.9	622		3.3
Peas and Beans				36		.38	80		.53
Irish Potatoes	1,526	2.2	1.4	2,083	2.1	3.2	3,867	2.9	3.5
Sweet Potatoes				202	.2	.53	300	.2	.71

Crop	Total (1000 lbs.)	Per capita lbs.	Per cent U.S. Total	Total (1000 lbs.)	Per capita lbs.	Per cent U.S. Total	Total (1000 lbs.)	Per capita lbs.	Per cent U.S. Total
Flax Fibre				584		7.6	97		2.0
Silk Cocoons	.38			.39			.58		
Hops	39		3.1	93		2.6	2.8		.3
Tobacco	1,820	2.7	.8	1,045	1.1	.5	8	5.9	1.9
Beeswax & Honey				.94	.95	6.3	1.3	.93	5.1
Maple Sugar	3,728	5.4	2.4	2,921	2.9	8.5	1,544	1.1	3.8

The foregoing table shows a slight shrinkage in the production of oats, flax fiber, silk cocoons, and hops, and a considerable reduction in the amount of maple sugar. The decrease in maple sugar naturally followed the forest reduction. The production of flax fiber, silk cocoons, and hops was almost negligible, being about to give way to the stable crops.

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[1] Bidwell and Falconer: "History of Agriculture in the Northern United States," p. 367.

Indiana's hay product was small in 1840, and large cattle growers were then experimenting with the cultivated grasses as a safeguard against the possible failure of the native herbage.[1] However, from five to ten thousand tons of hay were then being shipped annually down the Ohio from Lawrenceburg. Every county was growing hay by 1850. The U. S. census reports show that the state produced in round numbers 400,000 tons of hay in 1850, and 600,000 tons in 1860. Indiana's hay product in 1850 was two and nine-tenths per cent, and in 1860 three and two-tenths per cent of the total hay production of the United States for these years.

Indiana Livestock and Other Products—
U. S. Census Reports

1840		1850		1860	
Product	No. (1000)	Product	No. (1000)	Product	No. (1000)
Horses and Mules	241	Horses	314	Horses	521
		Asses & Mules	6.6	Asses & Mules	29
		Milch Cows	284	Milch Cows	364
Neat Cattle	620	Work Oxen	40	Work Oxen	118
		Other Cattle	390	Other Cattle	588
Sheep	676	Sheep	1122	Sheep	991
Swine	1,624	Swine	2264	Swine	3,099
	Lbs. (1000)		Lbs. (1000)		Lbs. (1000)
Wool	1,238	Wool	2610	Wool	2,552
		Butter	12882	Butter	18,307
		Cheese	625	Cheese	606
	Value ($1000)		Value ($1000)		Value ($1000)
Dairy Products	$742				
Orchard Products	110	Orchard Products	$325	Orchard Products	$1,259
Market Garden Products	61	Market Garden Products	73	Market Garden Products	546
Home Manufacturers	1290	Home Manufactures	1631	Home Manufactures	986

The table above shows a steady increase, in the closing decades of the later pioneer period, in the production of live stock and live stock products, of orchard and garden products, and —as would be expected—a falling off in home production.

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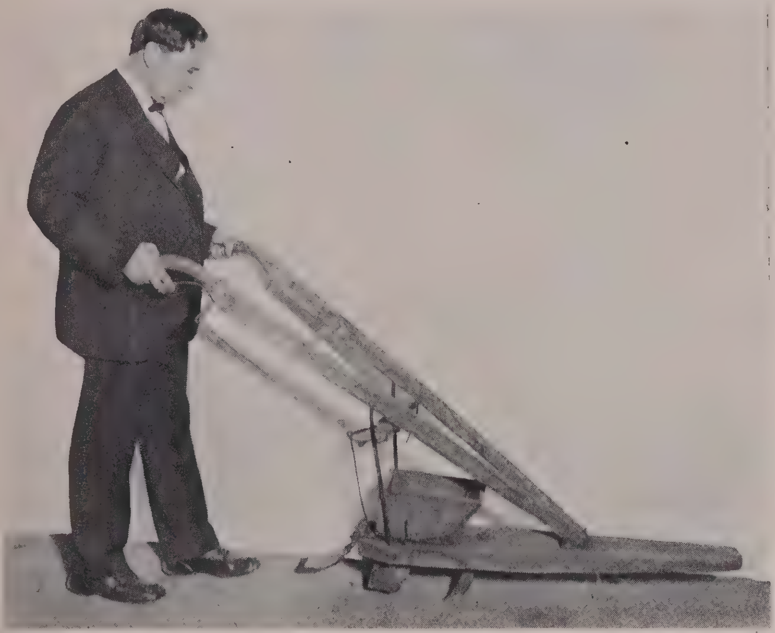
[1] Ellsworth: "Valley of the Upper Wabash," pp. 38-39.

Live Stock — Although there were individual efforts to introduce better stock in the state before 1840, there appears to have been no very general improvement of the live stock prior to the Civil War.

Hogs — Hogs were the first domestic animals to be marketed in Indiana in large numbers. The improvement of the semi-wild "woods hog" was therefore, doubtless, the first to receive general attention with the waning of the forest.



"Trigger" corn planter in the Miami County Agricultural Museum. The tripping device in the seed box is connected by wire with a short lever or trigger worked by the fingers of the right hand. This planter was made by Had Arrick, a farmer and blacksmith living near Somerset. It is understood that this planter was used 60 or 70 years ago.—Photo by J. C. Allen & Son, courtesy of H. C. Phelps.

According to Bidwell and Falconer,[1] little attention was given in the West to the type of hog for feeding prior to 1840, although 100 to 200 hogs were commonly fattened by Indiana hog raisers. "The common hog was of an ungainly type, with long legs and snout, a sharp back, of a roaming disposition, slow and expensive to fatten. These hogs were variously known as 'Alligator', 'Land pike', 'Razor-back', 'Prairie rooter', 'Seven-mile', 'Hazel-splitter', etc. For the existence they were compelled to lead they were well adapted."

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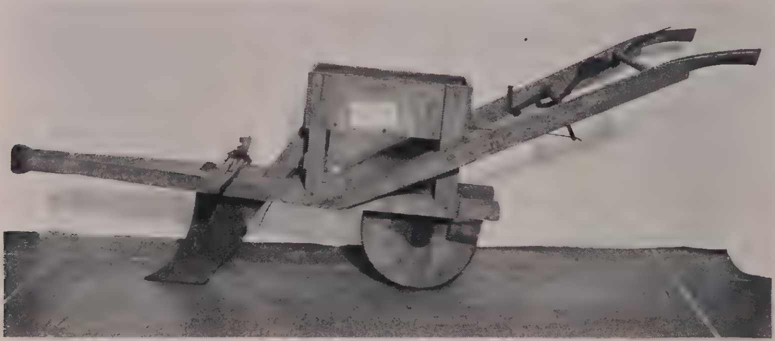
[1] "History of Agriculture in the Northern United States," pp. 439-441.

About 1840, breeds of hogs were being eagerly discussed, but most of the farmers still thought it necessary to cross the improved breeds with one that could roam the forest in quest of food and travel to market. The aim, then, was size rather than economy of production. Hogs were commonly sold at 18 months, weighing 200 to 250 pounds. The breeds of hogs in Indiana that received earliest mention were the Byfield, Woburn, Irish Grazier, China, Suffolk, Essex, and Warren County (Ohio), the last being later known as Poland-China.[1]

Where, when, and by whom these breeds were brought to Indiana is not recorded. As the swine improvements that finally culminated in the Poland-China hog began in 1816 near the western boundary of Ohio, it seems highly probable that there was an early infusion of this blood into the swine of some of our eastern counties.



Single wheel corn planter presented to the Tippecanoe County Historical Society by Peter Switzer of Otterbein. The tripping device, part of which is lost, is connected with the right handle. The history of this planter has been lost. It was no doubt used at an early day in Benton County.—Photo by J. C. Allen & Son, courtesy of Mrs. H. Y. Pollock, Curator of the Museum.

Hog production had spread widely over Indiana by 1840.[2] At numerous points on the Ohio and Wabash rivers and their tributaries there were shipping stations and pork packing establishments, showing the early prominence of the swine industry in Indiana.

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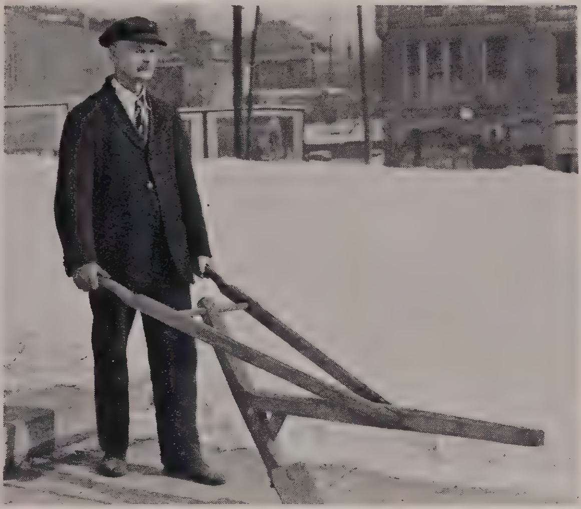
[1] Bulletin 326, Ohio Experiment Station, pp. 67-68.

[2] Bidwell and Falconer's "History of Agriculture in the Northern United States," pp. 438-441.

Merino Sheep—Birkbeck, an English farmer, observed indifferent specimens of Merino sheep at various points in his travels in 1817.[1] Sheep were then grown almost exclusively for wool, as mutton was not popular.

Shorthorn Cattle—The annual reports of the State Board of Agriculture show that Shorthorn or Durham cattle were brought to several points in Indiana prior to 1840.



The "hop-skip" an implement used in the early days for covering corn, potatoes, and other seed after it had been dropped into the furrows. It was drawn by a horse and the operator by an up and down motion of the hands gathered the dirt and then dumped it on each hill of seed. This is one of the many early day relics in the County Museum at Wabash, Indiana. This implement was made in 1858 by Samuel Walgmoth of Treaty, Wabash County, Indiana. This "hop-skip" implement was quite widely used about the middle of last century in covering corn, potatoes, and other seeds when dropped in hills. It was thrust into the ground between the hills and then lifted to deposit soil on the seed.—Photo by J. C. Allen & Son, courtesy of Dr. P. G. Moore, of Wabash.

Types of Horses—The early immigrants must have brought horses having an infusion of Morgan, Conestoga, and Thoroughbred blood. It does not appear probable that purebred horses of these breeds—except perhaps the Thoroughbred—were introduced prior to 1850.

Asses and Mules—According to Bidwell and Falconer, mule colts, sired by jacks sent from the grazing region of Kentucky into Indiana in the '40's, were sold into Kentucky at about six months of age and there grazed until ready for the southern market. Mule raising, however, was a minor industry in Indiana, confined chiefly to the south end of the state.

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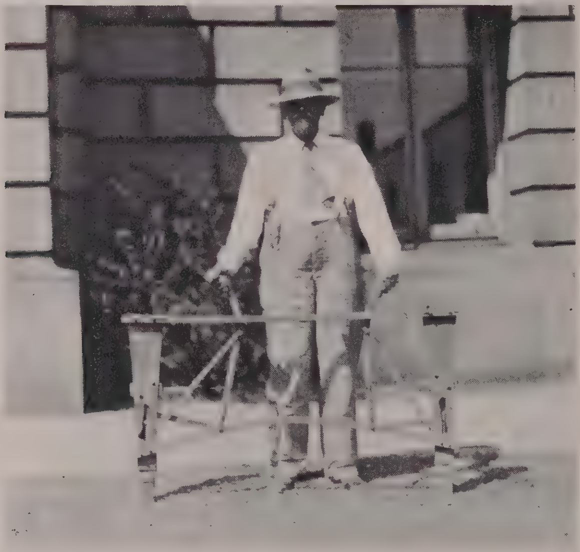
[1] "Indiana as Seen by Early Travelers," p. 175.

Early Show Stock—The premium lists of the State Fair prior to the Civil War mention no breeds of hogs or sheep, and only Thoroughbred horses, Devon, Shorthorn, Ayrshire, and Hereford cattle.

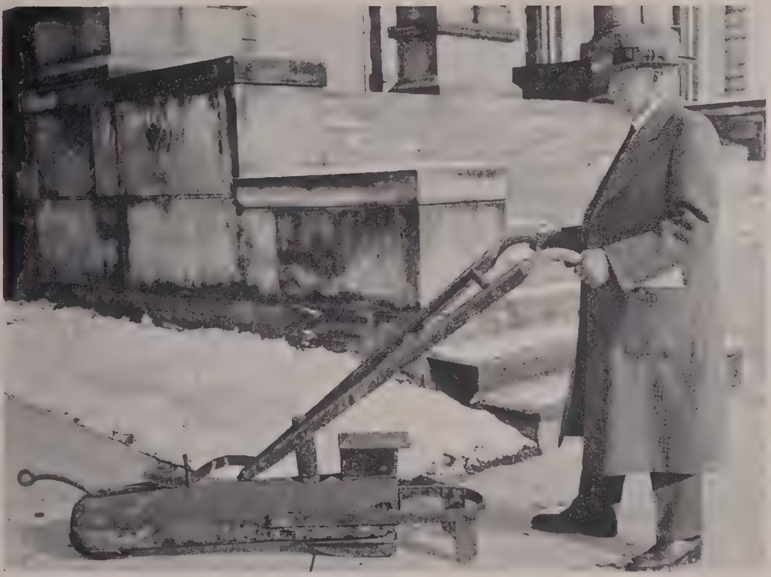
As there were Indiana exhibitors in the classes for "All purpose", "Light harness", and "Trotting, pacing and saddle" horses, it is evident that horse breeding along several distinctive lines had begun in the fifties, if not earlier. There were likewise Indiana exhibitors in the three sheep classes—"Fine wool", "Middle wool", and "Long wool", showing differentiation in sheep breeding.



A two-row hand planter made and used by Isaac Shank of Miami County and now in the agricultural museum at Peru.—Courtesy of County Agent J. E. Wylie.

Breeds of Poultry—Shanghai, Brahma, Cochin-China, Dorkin, Chitagon, Spanish, Bantam, Game and Bolton chickens; Peruvian and Poland ducks; and Bremen and China geese were shown.

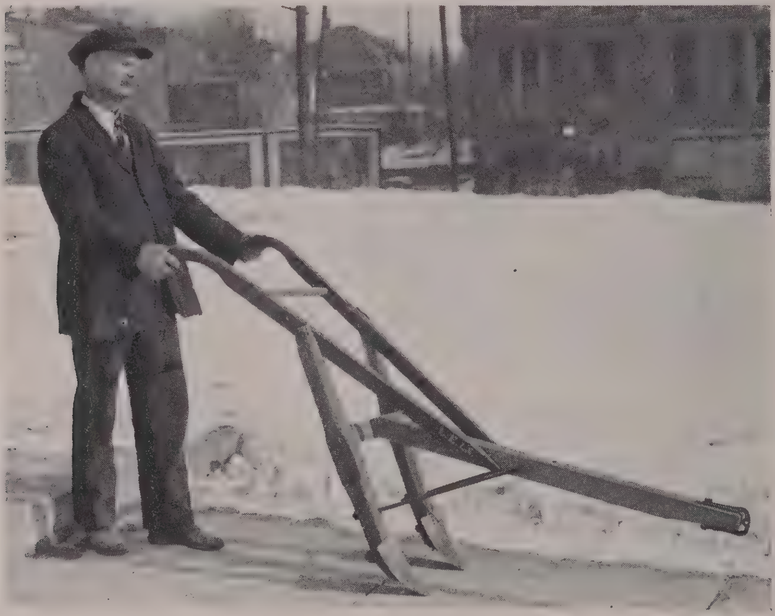
Live Stock Distribution — Judging from the small number of counties represented, the distribution of improved live stock was still quite narrow in 1858. The 44 awards won by Indiana exhibitors in the three classes of horses shown, went to only 18 counties. Thirty-eight awards on cattle were won by Indiana men representing only 9 counties. Twenty-three awards on sheep went to Indiana men representing only 6 counties. Nine counties shared 16 awards on hogs. The 19 awards on poultry went to Indiana men representing only 3 counties. The unequal distribution of improved stock in 1858 is further indicated by the fact that the Indiana winners of 140 livestock premiums represented only 20 counties, and also by the fact that 98 of these awards—70 per cent—went to 5 counties, namely, Wayne, 34, Marion, 28, Hendricks and Putnam each 14, and Montgomery, 8.



"Log," home made corn planter in the agricultural museum at Wabash. It was made from a piece of round timber about four feet long and bored out. An up-and-down movement of the handles let the grains of corn drop into the shallow furrow made by the shoe of the planter. The u-shaped bar with small shovels attached covered the seed.—Photo by J. C. Allen & Son, courtesy of Dr. P. G. Moore, President of the Wabash County Historical Society.

Improved Implements—The increasing agricultural production in Indiana from 1840 to 1860 was chiefly due to the growing cultivated area and to the introduction and use of improved farm implements, which greatly increased the capacity of the farmer to plant, cultivate, and harvest large areas of crops.

Improved Plows—The improved plow must be accorded first place among cultural implements. The cast-iron plow which appeared about 1825[1] had supplanted the wooden mold-board plow by 1840. The steel and chilled plows, required for river-bottom and prairie soils, were coming into use respectively about 1845 and 1855, and the subsoil plow followed within little if any more than a decade.



The straddle-row seed coverer was doubtless used in the fifties or sixties of last century in covering drill-planted seed. It differs from the double shovel plow only in having the shovels abreast.—Photo by J. C. Allen & Son, courtesy of Dr. Moore of Wabash.

The evolution of implements and machinery used in Indiana for harvesting field crops covers practically a century and is an interesting story of marvelous mechanical and agricultural development.

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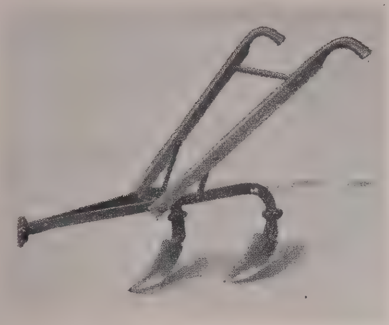
[1] Bogart's "Economic History of American Agriculture," pp. 44, 45.

Sickle, Scythe and Cradle — The primitive sickle or reap-hock was followed by the scythe in 1790, and early in the nineteenth century by the cradle which was invented in 1803.[1] The scythe and cradle are still in use on very broken land and steep, uneven hillsides.



The double shovel and expanding forms of cultivators came into use in the state in the fifties or sixties of last century. The former required going twice, and the latter but once, in each "middle" or space between two rows of the growing crop.—Photo by J. C. Allen & Son, from Bidwell and Falconer's *"History of Agriculture in the Northern United States,"* by permission of the Carnegie Institute.

Reapers and Mowers — The Hussey and McCormick reapers were patented in the early thirties of last century.[2] These machines merely cut the grain at first, a man being required to rake it off the table in bunches which were dropped behind the Hussey reaper and to the side of the McCormick machine. The small one-horse reaper soon gave way to the larger two-horse machine and this in turn to the still larger four-horse and six-horse reapers. The lighter machines cut eight to twelve acres per day. The heavier models could cut fifteen to twenty acres per day. Reapers were in common use about 1845,[3] and in Indiana about 1850. The dropper, the self-rake, the wire, and then the twine self-binder followed in succession. The wire binder did not prove satisfactory and had about gone out of use by 1860. The Marsh harvester, which required two men sitting on the machine to bind the grain, appeared in 1858 and was placed on the market in 1864. Another evolution in harvesting machines was the "header", which did not prove adapted to the humid climate of the Ohio Valley, but found its rightful place in the drier regions of the West. However, the combined harvester and thresher is now (1928) coming into successful use in Indiana. The superiority of

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[1] Bogart's "Economic History of American Agriculture," p. 74.
[2] Bidwell and Falconer: "History of Agriculture in the Northern United States," p. 287.
[3] Bidwell and Falconer: "History of Agriculture in the Northern United States," p. 287.

American reapers and threshers was demonstrated at Paris in 1855.[1]

Mowing machines came into use about a decade later than the reapers. Though imperfect at first, their evolution was rapid until they proved as serviceable as the grain harvesters.[2]

The International Harvester Company gives the following dates when the several types of reapers were put on the market:

One-horse, hand-rake reaper	1831
Two-horse, hand-rake reaper	1847
Reaper (hand-rake) and mower	1857
Reaper and mower, combined	1860
Self-rake reaper	1865
"Daisy" revolving self-rake reaper	1882
Hand binder (Marsh harvester)	1875
Wire binder	1877
Twine binder	1881

Horse Rakes—The development of the horse-rake began about 1820.[3] The revolving rake appeared about 1825. The Delano wheel rake appeared in 1856. The horse rake did the work of five or six men.

Hay Forks and Hay Balers—By 1860 hay-forks and hay-balers were coming into use, but hay-tedders, hay-slings, and hay-loaders appeared later.

The expanding form of cultivator appeared in Indiana about 1865.—Courtesy International Harvester Company.

Threshers—An early horse-power thresher, consisting of a spiked cylinder and a concave, came into use about 1840.[4] It did not separate the grain. Separators were added by 1850, and steam threshers appeared about 1860.

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[1] Bogart: "Economic History of American Agriculture," pp. 78-9.

[2] Bidwell and Falconer: "History of Agriculture in the Northern United States," pp. 294-5.

[3] Bidwell and Falconer: "History of Agriculture in the Northern United States," pp. 296-297.

[4] Bidwell and Falconer: "History of Agriculture in the Northern United States," pp. 215, 297-305.

Clover Hullers—As clover appears not to have come into general use in Indiana before 1850, the clover huller was doubtless not used in the state much if any before 1855 or 1860.

Drills and Planters[1]—Small grain was still sown broadcast in 1840. Although wheat drills began to appear about 1845 and were in rather common use in the East by 1850, they were probably not much used in Indiana before 1855 or 1860.

An early McCormick reaper. This form of harvester appeared in Indiana about 1850. A man was required to rake off the grain in gavels.—Courtesy International Harvester Company.

Hand seed-planters, chiefly for small seeds, were in use by 1840, but they were said to be not very satisfactory. About the same time hand corn planters came into use to some extent, especially in replanting. Some of these early forms are shown in the accompanying illustration.

Home-made Planters—At uncertain dates, but before the improved factory product came into general use, there appeared crude home-made types of horse-drawn, one-row corn planters which were used to some extent locally in Indiana. Two other early implements for covering seed corn and seed potatoes were the "hop-skip" and "straddle-row" or "straddle-bug", the former for covering seed dropped in hills and the other for both hill and drill planting.

Harrows and Cultivators[1]—The evolution of the harrow from the brush form, through the "A" wood-tooth harrow, the double "A" iron-tooth hinged harrow, the all-metal square steel-tooth section harrow, the spring-tooth and disk harrows, was practically complete by 1860 and most of the improved forms were in use in Indiana by that date or perhaps a little later. Though much improved by 1860, cultivators were not perfected by that date. The early cultural tools of the pioneer were the one-horse plow and the "jumping-shovel" which, with its coulter attachment, would jump over the stones and green tree roots. The double-shovel plow supplanted the single shovel, except for making furrows for planting, about 1850.

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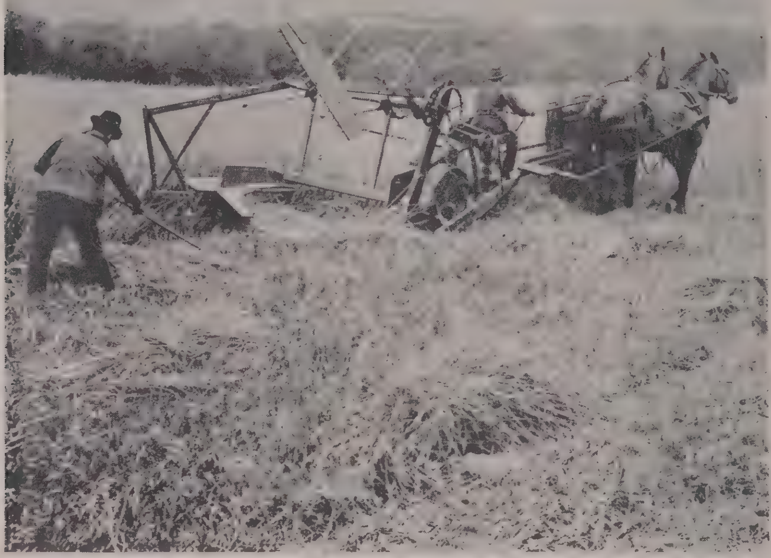
[1] Bidwell and Falconer: "History of Agriculture in Northern United States," pp. 302, 305.



The McCormick self-rake reaper came into use in Indiana about 1860. The self-rake reaper is still used in cutting and bunching the seed crop of clover. The dropper reaper appeared about the same time as the self-rake, or perhaps a little earlier.—Courtesy International Harvester Company.

Remarkable Development—The evolution of farm machinery from 1830 to 1885, and especially in the latter part of that period, was truly remarkable. Bidwell and Falconer state: "The Ohio farmer of 1860 who adopted the improved methods of production then available, could probably produce his crops with two-thirds the labor required in 1840."[1]

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[1] "History of Agriculture in the Northern United States," p. 305.

This statement seems very moderate and is doubtless equally true of the Indiana farmer of that period.

Unwelcome Innovations — Notwithstanding the great relief from heavy labor and the enormous increase in the capacity of the farmer to produce crops, the innovations in farm machinery were not always kindly received. Many farmers at first refused to use the cast-iron plow because they thought it would poison the soil.[1] Several of the early reapers were burned in Indiana because they replaced hand labor. But as a rule the farmers welcomed the labor-saving machinery as soon as it was known to be practical and economical. The first reaper that came into Union County did its initial cutting on Sunday, so that the farmers for miles around could see it at work.

Soil Depletion Still Prevalent — Although Indiana had practically passed from the self-sufficing to the commercial stage of agriculture by 1860, soil impoverishment still resulted from the prevalent methods of the farmers. Through the use of improved farm machinery, agricultural production was rapidly increasing, but the state had not then reached the status of self-sustaining agriculture.

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[1] Bogart: "Economic History of American Agriculture," p. 44. Carver, in Bailey's "Cyclopedia of American Agriculture," Vol. IV, p. 56.

Chapter VII.

PIONEER AGRICULTURAL LEADERS IN THOUGHT AND ACTION

IN THE preceding pages the writer has sought to trace what may be termed the early mass movement in Indiana's agricultural progress. These movements were not mere "groundswells". For each advance there must have been one or more pioneer leaders who stood out in front of the rank and file and blazed the way for the forward movement.

The meager gleanings concerning early agricultural leaders which the writer has thus far been able to secure are here presented. The following very incomplete list of pioneer leaders includes governors, speakers and writers, farmers and livestock men, inventors and makers of agricultural implements and machinery.

1. Early Indiana Governors

The following brief extracts from the messages of the early Indiana governors are taken from Tuttle's "Illustrated History of Indiana":

General Harrison—By 1809 our first territorial governor, William Henry Harrison, through tact and persistence, had effected treaties with the Indians for the United States which secured the cession of over thirty million acres of land. This was a matter of the utmost importance to the early settlers, nearly all of whom were land seekers and prospective farmers.

Governor Posey—Our second territorial governor, Thomas Posey, addressed the General Assembly, in 1813, thus:

> "It is necessary to have good roads and highways in as many directions through the territory as the circumstances and situation of the inhabitants will admit of. * * * Attention to education is highly necessary."

Governor Jennings—In 1816 our first State governor, Jonathan Jennings, called attention to the need of greater educational facilities. In 1818 he said:

> "The internal improvement of the state forms a subject of the greatest importance. * * * Roads and canals are calculated to afford facilities to the commercial transactions connected with the exports and imports of the country. * * * They enhance the value of the soil by affording the agriculturalist the means of deriving greater gain from its cultivation."

Governor Hendricks—In 1822 Governor William Hendricks congratulated the people on the agricultural and social happiness of the state, and said:

"We ought to leave free and unshackled our resources for improvement and purposes which the interests of the state may hereafter require, if not at our hands, at the hands of those who succeed us. * * * Let us not lose sight of those great objects to which the means of the state should, at some future day, be devoted—the navigation of the falls of the Ohio, the improvement of the Wabash and the White rivers and other streams, and the construction of National and other roads through the state."

The No. 40 Oliver Chilled plow at work. Chilled plows, owing to their ability to scour in prairie and sticky silt loam soils, began to displace the earlier cast iron plows about 1870. —Courtesy Oliver Farm Equipment Company.

Governor Ray—In 1825 Governor James B. Ray said:

"On the construction of roads and canals, then, we must rely as the safest policy to relieve our situation, place us among the first states in the Union, and change the cry of hard times into an open acknowledgment of our contentedness."

In 1831 Governor Ray added these words:

"Let the philanthropical but look at home for opportunities to display his pious benevolences, and his eye will recognize many a friendless, moneyless, orphan child whose soul only waits to be kindled into flame upon education's heavenly altar."

Governor Noble—Under the administration of Governor Noah Noble "The System" of internal improvements which had engrossed public attention for several years in a number of states, was actually begun in Indiana.

In his message to the General Assembly of 1833-4 he emphasized the importances of—

"the improvement of the Wabash and White rivers (then thought to be navigable), and the state roads from the Ohio river through Princeton to Lafayette, from Louisville to Vincennes, from the same place to Indianapolis, from this place to Crawfordsville and Lafayette, and from the seat of government to Rushville and Harrison, and upon such other principal roads as will interest all the counties and most subserve the public convenience."

Later, when work on the canals, the railroad from Madison to Indianapolis, and a road from New Albany to Vincennes, was well underway, Governor Noble remarked:

"Upon the issue of the enterprise in which we are now engaged, our state has staked her fortunes. She has assumed a great responsibility, but one that is full of hope and promise. Our great system may be said to be fairly begun, and the state has embarked in a course of policy from which there is no retreat."

Governor Wallace—By 1837 a reaction had set in, and discontent was still greater at the close of 1838. Though favoring the improvements inaugurated under Governor Noble's administration, Governor David Wallace expressed his deep concern in these words:

"Never before—I speak it advisedly—never before have you witnessed a period in our local history that more urgently called for the exercise of all the soundest and best attributes of grave and patriotic legislation than the present. * * * Therefore to sustain ourselves, to preserve the credit and character of the state unimpaired, we have not an hour of time nor a dollar of money to squander."

Critical Situation—The critical financial condition of the state in 1840 to which Governor Wallace referred is thus set forth in Tuttle's "History of Indiana":

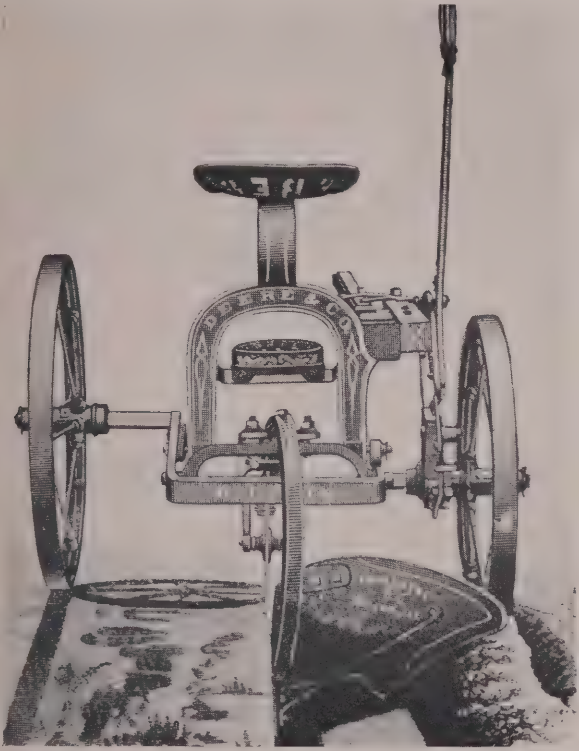
"The great question now was 'What shall be done with our public improvements?' The 'System' then embraced ten different works of which the most important was the Wabash and Erie Canal. Their aggregate length was 1,160 miles, of which only 140 miles had been fully completed. Over $5,600,000 had been expended on the various lines and at least $14,000,000 would be required to complete them. In August, 1839, all work ceased on these improvements, with one or two exceptions, and most of the contracts were surrendered to the state."

Governor Bigger—Concerning the condition of the public works, Governor Samuel Bigger in 1840 said:

"Their prosecution as originally contemplated, will not be seriously urged at this time. * * * Such a course would be the extreme of folly. On the other hand their entire abandonment, with the utter loss of the large sums of money already expended would be scarcely less ruinous in its consequences to our credit and ultimate prosperity."

Governor Whitcomb—Governor James Whitcomb's message, in 1843, contained these words:

> "Our position, soil and climate, as well as the habits of our people, all point to that branch of labor which is devoted to agriculture as our chief reliance for lasting wealth and returning prosperity."



The Gilpin sulky plow appeared in Indiana about 1875. The walking gang plow came on the market in the late sixties and the riding gang in the nineties of last century.—Courtesy of John Deere Company.

Governor Wright—Governor Joseph A. Wright, whose administration began in 1849, showed a warm and intelligent interest in agriculture. In 1851 he was unanimously elected president of the State Board of Agriculture. In his 1852 report of the board to the General Assembly he said:

> "It is very remarkable that a pursuit in which more than four-fifths of our population are engaged, should have remained so long without the spirit of emulation which the meetings of county and state fairs are so well calculated to bring about."

Agricultural Societies—Governor Wright was largely influential in securing the enactment, or more properly, the reenactment in 1851 of the premature laws of 1829 and 1835 for the encouragement of agriculture. The law provided for organizing and partly financing county and district agricultural societies which should hold fairs and offer premiums on meritorious articles and products. This law, enacted "in the fullness of time" as it were, met a quick response, as shown by the governor's second report to the legislature which states:

> "There is a growing agricultural spirit among our people. Organizations have been effected in 50 counties, and I lay before you reports from 33 of these counties."

2. Early Agricultural Speakers and Writers

Essays on Agriculture—Essays on agriculture and rural life were a prominent feature of the meetings and fairs of the county societies in the fifties. Many of the prize essays were published in the early reports of the State Board of Agriculture. The following paragraphs, quoted verbatim or substantially from these essays written mostly by patrons and friends of agriculture rather than by actual "dirt" farmers, indicate the trend of agricultural thought and also to some extent the stage of agricultural progress and the attitude of the farmers in the early fifties of the 19th century.

Joseph R. Williams—Address before the Elkhart county agricultural society, 1851:

> "I regard it as the duty of farmers to make and seek opportunities to compare and communicate with each other. * * * That man is successful who measures the respectability of his pursuit by the spirit and dignity with which he pursues it. * * * It becomes every farmer to demonstrate that an agricultural people can be a great, powerful and also a refined and intelligent people. Farmers of Indiana, when you scout the idea that you can learn anything from societies, books, fairs, schools, and chemical analysis and investigations, you are wrong—wrong practically, wrong theoretically, wrong morally, wrong politically, wrong economically, every way wrong."

James P. Milliken—Address before the Dearborn County agricultural society, 1852:

> "Intellect must guide the plow. Science and skill must guide the brawny arm, or the result will be uncertain. * * * The very word farmer associates with clodhopper. Why? Because even farmers themselves have not deemed it necessary to educate themselves or their sons for agricultural pursuits. * * * Let us have more learning that is applicable to our pursuits, and my word for it, we will make labor more productive and honorable, and place our noble pursuit on much higher ground."

J. W. Hitt—Address before the Franklin County agricultural society, 1852:

> "The American farmer wants a wheat or corn field a mile square, and for a pasture an interminable prairie."

John Dumont—Address before the Ohio and Switzerland County agricultural society, 1851:

"Without books and papers devoted to the subject (agriculture) rapid and valuable advances cannot be gained. * * * What is learned by toil and experience is valuable but it is too slowly acquired. When the diverse experiences of many are recorded and made public by printing, and generally read, it will mean a march of mind like the improvement of the electric telegraph upon the post-horn system of carrying mails."

Joseph A. Wright—Address at the Wayne County agricultural fair, 1851:

"One of the greatest blessings that is to follow these exhibitions of labor and skill, is that of an entire change in the character of the education of the youth. The time has been when young men were sent to college year after year to learn a little Latin and Greek and, too frequently, less common sense."

H. S. Cathorn—Address delivered at the Knox County fair, 1852:

"Agriculture claims preeminence above manufactures and commerce on account of its superior utility. But it is and always has been the most neglected. * * * But this reproach is being rapidly wiped away by the labors of agricultural philanthropists. * * * The successful experiments that have already been made have only paved the way for greater ones."

A. B. Conduit—Address before the Morgan County agricultural society, 1852:

"Hitherto the business of farming has had for its main object the mere supplying of the home wants, home comforts and conveniences. * * * Now, however, with the improved means of water and land transportation, more extensive markets in which to sell and buy, the cheap transit and choice of time to sell and buy, the farmer is in a position to command his own fortunes."

B. F. Morris—Address before the Ohio and Switzerland County agricultural society, 1852:

"A class of men so numerous and important (farmers) ought to be thinkers and men of intelligence for their own good and the good of their country. * * * That we may have a class of scientific farmers, there is indispensable need of agricultural schools. Why should not such fountains of intelligence be opened in every country?"

W. A. Barnes—Address before the Porter County agricultural society, 1852:

"Ten or fifteen years ago Ohio, Indiana and Michigan produced almost double the yield per acre which they now do. * * * Yet many expect a soil 10 or 12 inches deep to contain an inexhaustible amount of plant food, and they continue year after year to solicit, to urge, to wrench from their mother earth the nourishment which sustains them. * * * The true husbandman, with a mind stored with the great principles of our science, ever willing to receive and impart information, ever ready to carry out in practice that which reason teaches to be correct in theory—such a man is our beau ideal of a farmer."

D. P. Holloway—Mr. D. P. Holloway in 1852 made a report of Wayne County from which we quote as follows:

"Twenty years ago all the implements of husbandry were of the most primitive character. The ground was plowed three or four inches deep. * * * The corn was tended with a little harrow, often made of the natural fork of a tree, sometimes having wooden teeth. * * * The grain was tramped out at the rate of 12 or 15 bushels a day. Now many of our farmers plow 8 to 10 inches and, by subsoiling, 12 to 14 inches deep. * * * Our farmers now have steel plows, double and three-shovel plows and steel cultivators. * * * We sowed wheat with drills the past season. We have now the reaper which cuts 8 to 10 acres a day. * * * We are probably safe in saying that at least $10,000 was invested in improved live stock the past year. Rotation of crops, including clover and different grasses, is now considered highly important. Nothing like manure is suffered to be lost."

The wheel gang plow appeared in the nineties of last century. The walking form of gang plow came into use in the state, probably in the late sixties.—Photo by J. C. Allen & Son.

Byrem Lawrence—Address before the Wayne County agricultural society, 1852, on care of hill lands:

"Keep hill lands in grass one-half or two-thirds of the time, if plowed at all. Plow deep to prevent washing. In times of heavy rains, watch plowed land and stop at once, with straw, shavings, or brush, all cutting (erosion) as soon as discovered. If land, too step for cultivation, is cleared, set in grass for pasture or mowing. In general, land too steep for cultivation, should not be cleared, but converted into woods pasture."

Henry L. Ellsworth — Subsequent to his term of service as the first commissioner of patents, Mr. H. L. Ellsworth, "founder of the United States Department of Agriculture", dwelt for a time in Lafayette, Indiana, conducting large farming operations and disposing of government lands. To overcome the difficulty in planting corn on freshly plowed tough prairie sod, Mr. Ellsworth attached "something like axes" to a large wheel which made three holes with every revolution. Every kernel dropped into the hole thus made was said to grow.

Henry W. Ellsworth — In 1838 Henry W. Ellsworth, son of the commissioner of patents, issued a well-written booklet of 175 pages entitled the "Valley of the Upper Wabash". It set forth the advantages of the Wabash valley in point of soil, climate, and lines of communication east and south, and contributed materially to the settlement of the Wabash valley and of the state.

John H. Farnum — The provisions of the Ordinance of 1787 and of the State Constitution for a system of public schools, open and free to all, which would have been largely beneficial to agriculture, kept alive the desire to attain, and inspired early, though futile, efforts to secure such education. The people in general, however, were not ready for this advance step. John H. Farnum in 1826 came near being mobbed for advocating the opening of free schools, because taxes would have been increased thereby.[1]

William McClure — In 1826, William McClure, patron of education, established and financed a free industrial school at New Harmony, with William Neef at its head. This school was carried on until 1834 as a feature of the Owen Community. This was probably the first experiment of the kind in the state. The older pupils worked on the farm and in the gardens as well as in shop, printing room, etc.[2]

Caleb Mills — Caleb Mills of Wabash College is deserving of special mention for his zealous, forceful, and persistent advocacy of better schools before sessions of the Legislature and other bodies.[3]

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[1] Stevens: "History of Washington County," pp. 335, 615.

[2] "The New Harmony Communities," pp. 186-195.

[3] Esarey: "History of Indiana," Vol. II, pp. 681-691.

Free School in Indiana—It was not until 1847, however, that the people of Indiana in a referendum vote decided in favor of free schools. Authorized by this popular vote the General Assembly in 1848 enacted a bill for better common schools which became a law January 17, 1849. But so fearful were the legislators lest the tax provision of the law would not be supported, that the adoption of the law was made optional with the several counties. With this proviso the law was adopted in 61 counties and rejected in 28.[1]

Indiana Farmer—The publication of the Indiana Farmer began in 1822 at Salem. At first it appears to have been a farm paper only in name, as its columns were filled with domestic and foreign news to the practical exclusion of anything distinctively agricultural. The conclusion is that the farmers of that early period were not eager to learn about agriculture. After some years the paper was moved to Richmond and, later, to Indianapolis where it was published until merged with the Farmers Guide at Huntington in 1917. In its earlier years the Indiana Farmer evidently had a rather precarious and interrupted existence. For a time in the thirties it was published under the auspices of the State Board of Agriculture.

Henry Ward Beecher—In 1845 and for two or three years thereafter, Henry Ward Beecher, then pastor of a church in Indianapolis, edited the paper under the titles, Indiana Farmer and Gardener, and Western Farmer and Gardener. Horticultural topics were given prominence during Beecher's editorship.

3. PIONEER FARMERS AND LIVE STOCK MEN

Colonel Farrow—According to Parsons, Col. Alexander Farrow, prior to 1840, successfully grew blue grass on his farm near Putnamville, Putnam County, from seed which he obtained in Kentucky.[2]

John Burkhart—In 1857 or 1858 John Burkhart, a farmer of Tipton County, went to Hamilton County and brought back a wagon load of clover seed in the chaff. Thus the growing of clover was begun about four miles west of Tipton. The farmers were at first slow to take up this innovation, but as Mr. Burkhart continued every year to grow clover, its use finally became general.

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[1] Esarey: "History of Indiana," Vol. II, pp. 681-691.

[2] "A Tour Through Indiana in 1840," p. 283.

Prize-winning Farmers—Under the stimulus of premiums offered at the state fairs large crop yields were produced by leading farmers as follows: In a 10-acre corn-growing contest in 1856, Swan Brookshire of Montgomery County produced an average yield of 146½ bushels per acre; Michael Weider of Sullivan County, 171 bushels per acre (probably bushels of ears—Author). In a boys' one-acre corn-growing contest, John Williams of Knox County led, but the yield was not given. This boy also led with spring wheat, producing a yield of 33½ bushels on one acre.

The rectangular peg-tooth section harrow, at first with wood frame and steel teeth and later of all steel, came into use in the state about 1860 or 1865. This type of harrow, with teeth adjustable to either vertical or slanting position, has largely superseded the earlier forms of peg-tooth harrows.—Courtesy Oliver Farm Equipment Company.

In a 10-acre wheat-growing contest in 1857, Elias Ogan of Wabash County averaged 31½ bushels; James A. Meryman averaged 33 bushels; William Fulwiler of Howard County produced 48 bushels on one acre; J. D. Williams of Knox County won first on 10 acres of oats with an average yield of 83½ bushels, and S. H. Anderson of Marion County took second with an average yield of 57 bushels.

James D. Williams—James D. (Blue Jeans) Williams of Knox County began farming in 1818. Though an early pioneer farmer, he later won many prizes at the State Fairs on heavy crop yields. He was for many years an active member of the State Board of Agriculture and in 1876 was elected governor of the State as the champion of the farmers whose interests he ever warmly espoused.[1]

Charles W. Cathcart—In 1831 C. W. Cathcart, formerly a sailor, but desirous of becoming a farmer, came to LaPorte County and took a "tomahawk" claim near Westville by putting four logs together in the form of a square and cutting his name in the bark of a near-by tree. For a time he worked as a carpenter at Niles, Michigan, but visited his claim frequently to see that no one had "jumped it". On one of these visits he met a band of Fox Indians, then on the war path. They handled him roughly and showed him that their powder was dry. He built his cabin in 1832. Later when the Chicago settlement was threatened with massacre he was employed by the government to carry munitions of war for its relief. He made the journey of about a week with two yoke of oxen, traveling much of the way on the lake shore, and at night to avoid the black flies, from which he protected the oxen in the day time with smoke.

His daughter, Mrs. Jane B. Cathcart Johnson, thinks that her father brought the first Jersey cattle to LaPorte County. Later, in 1876, he brought in a lot of young Jerseys and was ridiculed by his neighbors for introducing small stock into the county.

Hunt and Morrison—The history of Ohio and Switzerland Counties relates that about 1825 Jesse Hunt of Lawrenceburg shipped the first flatboat load of hay down the Ohio River.[2] For baling the hay a Mr. Morrison invented and built a hay baler which he later patented. This successful venture, which at first brought the jeers of Mr. Hunt's neighbors, led to regular shipments of hay which continued for many years as a lucrative business, although it resulted in the serious impoverishment of the soil.

Jonathan Jennings—After retiring from public life and while living on his farm near Charlestown, Clark County, Jonathan Jennings, in 1832, imported clover seed from England, paying $35.00 a bushel for it.[3] He is believed to be the first man to introduce clover seed into Indiana. He was also fond of growing fine stock.[1]

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[1] Esarey: "History of Indiana," Vol. II, p. 876.

[2] "History of Ohio and Switzerland Counties."

[3] Levering's "Historic Indiana," p. 466, Edition of 1909.

James T. Embree—On his return home at the close of the Civil War, Colonel James T. Embree made and used upon his farm near Princeton a plank drag to crush clods and prepare the ground for corn and wheat. This was probably the first use of this implement in Gibson County. The neighbors were inclined to ridicule this innovation.

Pierre Brouillette—About 1835 Pierre Brouillette led a white Durham cow and her calf from New Jersey to Knox County, Indiana, a feat that would appall a present-day farmer. His descendant, Mr. M. A. Brouillette, of Vincennes, who related this story, also stated that Hollanders introduced Holstein cattle into Knox County, about 1845.

Shorthorns in Indiana—The following facts concerning the early introduction of Patton stock and Shorthorn cattle into Indiana are gleaned from a paper on the history of Shorthorn cattle by Professor C. F. Gobble of Purdue University.

Edward Talbott—In 1825 Edward Talbott brought from Kentucky to Jefferson County, Indiana, two young cows and a bull, of Colonel Sanders' 1817 importation of Shorthorn cattle. The cows proved to be good milkers but no record appears to have been kept of their breeding.

John Owens—About 1828 John Owens of Monroe County brought from Kentucky some specimens of "Patton stock". These cattle were criticised for being flat-ribbed and lacking in width of hips. These defects were later remedied by an infusion of Durham blood from Ohio. These cattle were red, white, and roan, and excellent milkers. For a time Mr. Owens kept a record of his breeding, and some of his cattle are registered in the herd book.

The Owens Exhibit—At the first Marion County fair in 1835 John Owens exhibited Shorthorns of his Monroe County herd on the Governor's Circle in Indianapolis. These fine cattle proved a novel and great attraction.

Thornburg and Justice—In 1833 Messrs. Thornburg and Justice brought the first Shorthorns from Kentucky into

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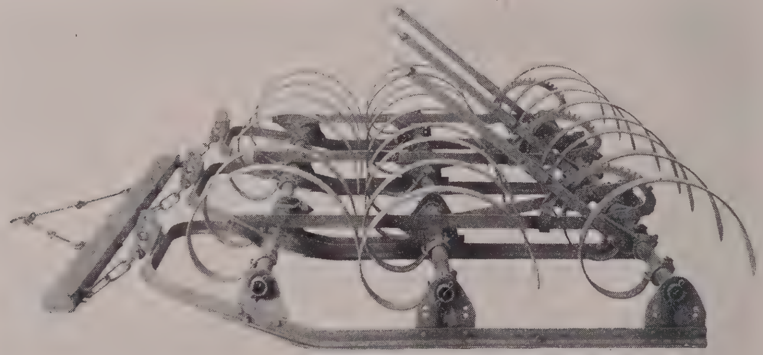
[1] "Cincinnati Commercial Gazette," Dec. 1, 1894.

Wayne County. These cattle—two yearling bulls, "Dimple" and "Logan", and two heifers, "Venus" and "Beauty"—were the foundation of the herd which was maintained continuously for many years on the Thornburg farm located on the boundary of Fayette and Wayne Counties.

Christopher Whitehead—The first importation of Shorthorn (Durham) cattle, from England direct to Indiana, was made in 1838 by Christopher Whitehead of Franklin County. Supposed descendents of these cattle were regarded by Shakers of Whitewater village as the best Durham stock of the country. They were bought by the Shakers of Western Ohio, and Indiana was thus deprived of the possible benefits of this importation.

Dr. A. C. Stevenson—In 1837 Dr. A. C. Stevenson brought to Putnam County Shorthorn cattle from the Owens herd in Monroe County. He was for many years a prominent breeder of Shorthorn cattle. In 1853 he went to England and inspected some of the most noted herds. He brought back some fine specimens of the breed, the second importation of Shorthorns from England direct to Indiana. Later, Dr. Stevenson was largely instrumental in effecting the organization of the Indiana Shorthorn Breeders' Association.



The spring-tooth harrow came into use in Indiana in the sixties or seventies of last century. The vibrating, tearing and lifting action of the flat blades make this a fine implement for uprooting grass and weeds and bringing clods to the surface to be reduced by the clod crusher.—Courtesy Oliver Farm Equipment Company.

The Owens of New Harmony—In 1838 the Owens of New Harmony brought Shorthorn cattle from Champaign

County, Ohio, into Posey County. They also brought to New Harmony other good cattle from time to time.

Stockwell, Finney and Colonel Long—Early in 1839 Messrs. Robert Stockwell and James Finney brought Shorthorn cattle into Gibson County. In 1840 Colonel Long of Kentucky brought to New Harmony a pure white Shorthorn bull, "Nimrod". Though somewhat "leggy" he proved to be a wonderful breeder and made, on the native stock, an improvement that was manifest for 40 years. According to Mr. H. Renick, the "Nimrods" were allowed to disappear because of their prevailing white color.

Records Not Kept—These early Shorthorns were brought into the state before the issue of the first volume of the American Shorthorn Record and in practically all cases no systematic record of their breeding was kept. Although they effected much improvement locally on the native stock, their influence was apparently not widespread. In most cases the Shorthorn blood of these early herds appears not to have been long preserved in its purity. According to Bidwell and Falconel these English cattle were thought too "fancy" for the average farmer of that period.[1]

Newton Claypool, William Caldwell, William Daily—About 1838 Newton Claypool, General William Caldwell, and William Daily brought from Kentucky to Fayette County three heifers and one bull, descendants of the 1837 importation of Shorthorn cattle.[2]

General Meredith—In 1851 General Meredith of Cambridge City established the Oakland Farm herd, in which were some of the best Shorthorn cattle of Kentucky, but his first purchase of a Shorthorn bull was in 1836.[3] Other fine cattle were added from time to time to this herd. For a number of years General Meredith was a successful breeder and exhibitor of Shorthorns. After his death his son, Henry C. Meredith, continued the business, and still later, the high standing of the herd was mantained by the latter's widow, Mrs. Virginia C. Meredith, so well known as a Farmers' Institute speaker and agricultural writer.

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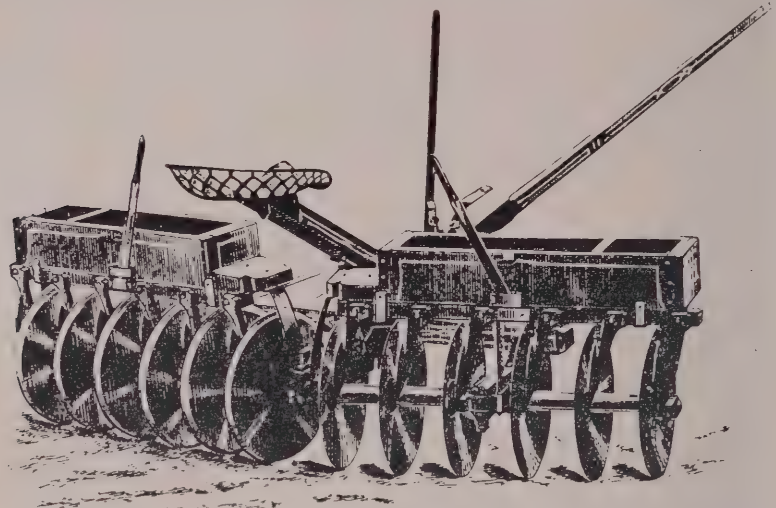
[1] "History of Agriculture in the Northern United States," p. 180.

[2] "Illustrated History of Fayette County," p. 78.

[3] Sanders, "Shorthorn Cattle," p. 321.

Other Shorthorn Breeders—A directory of Shorthorn breeders published in 1877 shows that other Shorthorn herds were established in the fifties in Indiana as follows: Beach Grove herd, 1852, at Billingsville, by Smith Wooters; Union Valley herd, 1853, at Nappanee, by John H. Huffman; Limedale herd, 1853, by Thomas E. Talbott; Deer Creek herd, 1856, at Cadiz by B. H. Wilhoit; Pine Grove herd, 1851, at Middletown, by Thomas Wilhoit.[1]



An American type of disk harrow, an improvement on an earlier Japanese form, appeared in the seventies of last century. The disk harrow serves the double purpose of cutting the soil crust before using the breaking plow, thus reducing the cloddiness at the bottom of the furrow, and of further fitting the plowed ground for seeding or planting. The later double disk makes this type of harrow an excellent tillage implement.—Courtesy International Harvester Company.

It thus appears that Shorthorn cattle were well established in a number of centers in Indiana by 1860, their leading strongholds being then doubtless in Wayne and Putnam and Henry Counties.

Williams and the Abrahams—About 1832 Merill Williams brought an iron-gray horse, "Highlander", to Fayette County.[2] About the same time John and Lot Abraham brought to Connersville a fine horse, "Top Gallant", a descendant of the imported horse "Diamond".

W. W. Thrasher—Sometime between 1830 and 1840 W. W. Thrasher brought from Lexington, Kentucky, to Fayette

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[1] Ibid., pp. 323-324.

[2] "Illustrated History of Fayette County," pp. 80, 83.

County some fine sheep called Cotswolds. These sheep, which were bred by Mr. Thrasher for many years, were among the first if not the first good sheep brought to Fayette County.

Early Horsemen in Rush County—According to George W. Campbell, an early interest in speed horses in Rush County was promoted by such men as Isaac B. Loder, John M. Shawhan, William S. Hall, Ab. Manlove, George Shropshire, Smith Scott, Joe and Frank Gosnell, and the Coulters just over the line in Franklin County.[1]

As early as 1854 John M. Shawhan brought from Kentucky, Shawhan's "Tom Hal" (Sorrel Tom), the founder of the present Tom Hal family of Tennessee and Kentucky. George Shropshire in 1854 brought from Kentucky Shropshire's "Tom Hal", a roan which proved to be a valuable stock horse. The activities of other horsemen, including Jim Wilson who introduced Blue Bull 75, the famous sire of trotters, appear to belong to a later period.

Rush County Shorthorn Breeders—The early Shorthorn breeders of Rush County listed by Mr. Campbell were Garrett Wykoff Sr., James L. Caldwell, Isaac B. Loder, Jonathan Caldwell, and William S. Hall. They probably brought the first purebred Shorthorn cattle from Kentucky at about the same time, 1854-7. In this early herd of cattle were three noted bulls, "Belmont", "Comet", and "President". Comet was a prize winner at a National contest held in Philadelphia before the Civil War.

4. EARLY INDIANA INVENTORS AND MAKERS OF AGRICULTURAL IMPLEMENTS AND DEVICES

The rapid development of Indiana agriculture since 1840 has been largely due to the inventors and manufacturers of agricultural implements and machinery. The devotion, sacrifice, and dogged persistence of many who have contributed to the development of farm implements constitute a thrilling story.

Charles Newbold—It is said that Charles Newbold of New Jersey, who invented the first cast-iron plow, spent $30,000 in his futile efforts to introduce it, because the farmers thought it would poison the soil and increase weed growth.[1]

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[1] "Rush County Atlas and Directory," pp. 153-4; 163.

Jethro Wood—Jethro Wood of New York, the inventor of the first cast plow with replaceable parts, died a poor man because of costly litigation in an effort to protect his patents from infringement.

Indiana Inventors—In this march of mechanical progress, Indiana inventors and manufacturers have had at least a modest part. From R. L. Audrey's book on "American Agricultural Implements" most of the following facts have been gleaned:

In 1852, H. Vermillion of Rising Sun patented a peculiar distributing device for a corn planter.

In 1857, Jarvis Case of Lafayette patented the double-shoe reversible corn marker to be used on the corn planter.

In 1866, W. W. Hubbard of Edinburg patented various corn planter improvements.

In 1857, N. Whitehall patented the arched axle for the straddle-row corn cultivator, thus doubtless doubling its efficiency.

J. J. and H. F. Mann patented a self-rake attachment to a reaper.

In 1860, B. F. Witt patented a harvester with a supplementary carriage attached, with saddles for binders.

In 1868, C. W. and B. F. Witt patented a tipping rake for a harvester.

In 1893, Wm. N. Whitley and Company of Muncie exhibited at the Columbian Exposition, Chicago, three types of sled corn-harvesters.

James Oliver—To James Oliver of South Bend, who began as a moulder in 1855, the farmers throughout the world owe a great debt for his invention and manufacture of chilled plows. After a few years of cultivation, the prairie and silty loam soils became so "sticky" that the common cast plows would not scour in them. Mr. Oliver sought to solve this perplexing problem of the farmers, although others before him had spent a quarter of a century and squandered fortunes in a futile effort to make a serviceable chilled plow. Despite the protests and jeers of others Mr. Oliver set to work and, for years, gave his thought and effort to this self-imposed task. Although meeting with many discouragements in his experiments, Mr. Oliver finally accomplished the successful chilling of the iron to secure hardness, next in making a smooth surface, and then in annealing the metal to give it the necessary toughness. His triumph at last was complete, and since then his plows have gone to every civilized nation on the globe.

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[1] Bogan's: "Economic History of American Agriculture," p. 44. Carver in Bailey's "Cyclopedia of American Agriculture," Vol. IV, p. 56.

A PLOWING SONG[1]

By Fannie R. Buchanan

A growing day, and a waking field
And a furrow straight and long;
A golden sun, and a lifting breeze,
And we follow with a song.

Chorus

Sons of the soil are we,
Lads of the field and flock;
Turning our sods, asking no odds,
Where is life so free?

Sons of the soil are we,
Men of the coming years,
Facing the dawn, brain ruling brawn,
Lords of our lands we'll be.

A guiding thought, and a skillful hand,
And a plant's young leaf unfurled.
A summer's sun, and a summer's rain,
And we harvest for the world.

Henry L. Ellsworth of Lafayette devised a wheeled implement for cutting slits in the freshly-inverted tough prairie sod into which the kernels of corn were dropped. The wheel was large enough to make three of these slits or notches at each revolution. Metal pieces having a cutting edge somewhat like an axe were clamped to the wheel for making the slits.

Had. Arrick, a blacksmith living near Somerset, Wabash County, made an early "trigger" corn planter which was doubtless drawn by one horse. This was evidently used for hill planting as there is a wire tripping device, connected with the right handle and worked by the fingers, which permitted the kernels to drop at the intersecting furrows. Pictures of this planter and two others of similar form are shown in Chapter VI.

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[1] By permission of the Author and of the Home Publishing Company, Grinnell, Iowa.

William Aitkenhead—Professor William Aitkenhead, Chief of the Agricultural Engineering Department of the Experiment Station, Purdue University, had an important share in perfecting and patenting a soil pulverizing attachment to the two or three furrow plow known by the trade name, "Pulverator". It consists of a vertical shaft with numerous horizontal blades. The device is attached to the plow just back of the shortened mold board with a power take-off from the tractor. The moving tractor sets these metal blades to revolving rapidly, which thoroughly pulverize the soil, cut into small bits any litter or manure and mix them with the soil, thus fitting the ground in a single operation for planting or seeding.

To the foregoing very incomplete list of pioneer agricultural leaders in Indiana might be added scores and even hundreds of others (if their record were known to the writer), who by their championship of progressive measures, their devotion, their sacrifices, and their worthy endeavors have helped to promote the agricultural advancement of the state.

Chapter VIII.

TRANSITIONS IN INDIANA AGRICULTURE

TRANSITION CONSTANT — Strictly speaking, transition is a permanent phase of progress. This is as true of agriculture as of other pursuits. Although the several successive steps by which progress is made shade almost insensibly from one to another, the cumulative effect of years marks a distinct stage or epoch of agricultural progress.

Stages of Transition — The more marked changes in the agriculture of the State include the following transitions:

1. From self-sufficing to commercial agriculture.
2. From soil mining to soil renewal.
3. From man-power farming to horse and mechanical power farming.
4. From grain growing to mixed husbandry.
5. From farming as a means of mere subsistence to agriculture as a business.
6. From the cultivator and stockman to the citizen farmer.

Some of these transitions have been taking place almost simultaneously, others in succession, but with more or less overlapping in all cases.

Self-sufficing Agriculture — The early settler with his small forest clearing could grow only a few acres of corn and vegetables, merely enough to give variety to his diet of bear meat and wild turkey and venison. For both food and clothing and, to some extent also, for shelter, he must depend largely upon the flesh, skins, and furs of wild animals. There were then no means of transportation except slow winding streams, no highways, no nearby markets. The individual frontiersman and his family lived largely unto themselves, unable alike to give to, or receive from, others. As time passed, however, fibre crops were planted, and the coarse flax, hempen and cotton cloths, and linsey-wolsey began to supplant the animal skins for clothing.

Commercial Agriculture — Then as other settlers came and neighborhoods grew, the aggregate surplus productions of several small farms were enough for a boat load. This started the down-river flatboat trade and the bringing back of textile and metal goods. Thus, in a very simple way was the crude beginning of commercial agriculture inaugurated in Indiana about 1810.

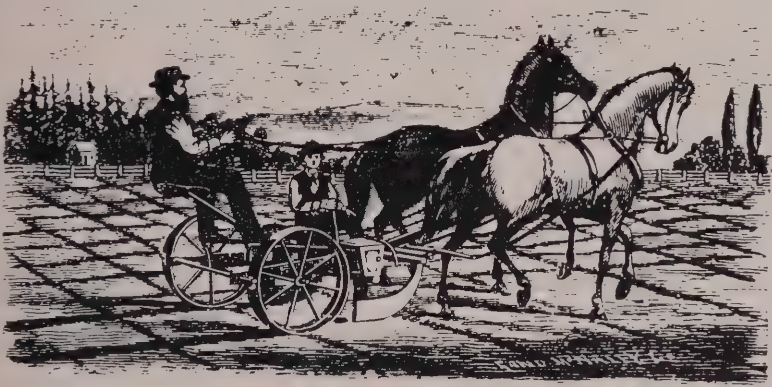
Later, with the growth of the river trade and the coming of the roads, canals, and railroads, the volume and variety of products sold and bought rapidly increased, and home manufactures steadily declined, until by 1860, the self-sufficing period of Indiana agriculture was practically closed and the commercial period fully ushered in.

Soil Mining—Throughout the first three quarters of the nineteenth century, and even later, the constant drawing upon the accumulated store of available plant food in the soil, without making any adequate return was the general rule. In fact the exceptions were rare. So productive was the virgin soil—especially that of the river valleys—that wheat could not be grown successfully until several crops of corn had somewhat reduced the rankness of vegetation.

Soil Thought Inexhaustible—In some exceptionally fertile sections, it was affirmed that even fifty successive crops of corn had not materially reduced the productiveness of the soil, an assertion which tended to support the claim of inexhaustible fertility. Of course in the earlier years there was the ever-present opportunity to clear new land and give the previously-cropped fields a chance for self-renewal of productiveness during a brief period of rest, called summer fallowing. Later, with the advent of better tillage implements, there was deeper plowing, better cultivation, and still later, subsoiling and underdrainage all of which tended to obscure the evidence of waning fertility. However, the change from successive to alternate cropping or to other methods which varied the time and manner of drawing on the soil's plant food supply, betrayed a growing recognition of the soil's needs.

Clover and Lime—This was followed by the planting of clover and the application of agricultural lime, which rendered available latent soil resources or tapped a fresh vein of soil fertility. The clover, however, was not permitted to bestow its full measure of benefit on the soil. At first—or very early—it was quite the rule of the grain farmers to take off two clover crops the same season, one for hay and another for seed, in order that they might have something more to sell.

Even the clover straw was seldom returned to the field. The clover roots were then thought to make sufficient return to the soil. By these several expedients the evil day was postponed and thus the steady loss of soil fertility and the diminishing power of the soil to make profitable returns were rendered less apparent. The larger majority of the farmers of this period (down to 1860 or later) appear to have been ignorant of, or indifferent to, the growing need of systematically restoring plant food to the worn soil.



The two-row corn planter with hand drop appeared about 1865. This was followed about 1870 by the check wire planter. The latter has supplanted the former.—Courtesy International Harvester Company.

Losing Organic Matter—Gradually the reduced yields, despite preventive efforts, forced the fact of waning soil fertility into the inner consciousness of the farmers. Doubtless the first unfavorable condition of the soil to attract attention, was its loss of mellowness. Owing to the excessive amount of vegetable matter in the newly-cleared land, even the leaves and twigs were raked together and burned. Later, the heavy stubble was also sometimes burned to destroy weed seeds and to permit easier cultivation and more even seeding.

Burning Cornstalks—As the area devoted to corn increased, the excess of corn-fodder beyond the demand for forage, caused many of the farmers to leave the cornstalks standing in the fields, to be broken down the following spring, raked into windrows, and burned as the easiest way of getting rid of them. This wholesale destruction of organic matter, the selling of hay by the grain farmer and the burning of straw or its sale for a "song", rapidly reduced the organic matter of the soil.

Compact Soils — In consequence the cultivated soils became increasingly compact. Many upland clays, and the silty river bottoms whose upper layer was sediment from worn clay sections, would "run together" under beating rains and become almost as impervious to water as the bottom of a hog wallow. Such soils were putty-like and sticky when wet, would bake and crack open on drying, and when plowed, would break up into large clods which could be reduced only with great difficulty and much labor. The more compact spots of these heavy soils, even though properly underdrained, would not admit the rainfall because of their cement-like surface layer. The water must either run off at the surface or lie stagnant until slowly removed by evaporation. Sandy and gravelly soils also suffered from loss of organic matter but this did not seriously interfere with their cultivation as in the case of the compact soils.

Mineral Fertilizers — In 1841[1] Liebig's theory of mineral fertilizers became known. In consequence, the impression became prevalent that a soil analyst could, for a small sum, determine the chemical composition of the soil and then suggest the minerals needed to produce abundant crops. The plausibility of the theory caught the attention and fired the imagination of agricultural lecturers and writers, who continued, for more than 40 years, to proclaim this chemical agricultural gospel, until the experiment stations in the late 80's began to demonstrate "a more excellent way". Frequently the application of mineral fertilizers had little effect because of the compact physical texture and inactive biological condition of the soil which was due to the oxidation of its organic matter.

Soil Renewal — Perhaps in the 40's—and in rare cases possibly earlier—the more intelligent and wide-awake farmers, learning of the improved farm practices in the eastern states, began to mend their ways concerning the care of the soil. Slowly, as improved methods began to show results, others followed in increasing numbers until finally the rank and file of the farmers began to fall into line.

Better Farm Implements — Here again, as on numerous other occasions, the inventor and manufacturer came to the rescue with improved farm implements. The cornstalk chopper, which cut and broke the stalks into short lengths, enabled the farmer to plow them under instead of burning. The knife-like rolling coulter attachment to the plow cut its way through coarse litter so that it could be turned under, and the disk harrow and disk drill made it possible to work amidst any rubbish left on or near the surface. Thus, the replacing of the lost organic matter of the soil began.

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[1] Bidwell and Falconer: "History of Agriculture in the Northern U. S.," p. 319.

Feeding in the Fields—Stockmen who for many years had followed the practice of hogging off corn as an economical method of harvesting the crop began to see its relation to renewal of soil fertility. Hence the practice of field-feeding with the conscious purpose of making a larger return to the soil came into vogue.

In the foregoing ways the farmers gave expression to their changing attitude toward soil renewal. This change of view and practice was, however, very gradual and it is not even yet complete. Not until about 1890 could it truthfully be said that the era of soil renewal and self-sustaining agriculture was fairly inaugurated in Indiana.

Man-power Farming—At first the pioneer, in most cases, had only hand tools of clumsy or primitive type. These were the flint-lock rifle, axe, maul and wedge, hoe, shovel, sickle, corn-knife, rake, fork and flail. The few crops were planted, cultivated, harvested, and threshed by hand. At first the threshed grain was winnowed (separated from the chaff) and pounded or crushed by hand, between stones or in the hollowed-out top of a stump, into a coarse meal.

Later Hand Implements—Probably by 1810 came the mowing scythe and the grain cradle by 1825, which supplanted the centuries-old sickle. Very early there were various crude home-made devices for scraping the kernels from the corn cobs. Sometimes the shelling was done by drawing the ear across the edge of a vessel of some kind or by rubbing off the kernels with the hands. One after another, at uncertain dates, came the hand-driven fanning-mill, the corn-sheller, the feed-cutter, feed-grinder, and even—in Washington county—a two-man threshing-machine,[1] dubbed a "man-killer" and hence but little used.

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[1] W .W. Stevens: "History of Washington County."

Animal-power Farming—American inventiveness and Yankee ingenuity would not long permit exclusive man-power in agriculture. Doubtless the first agricultural implement in Indiana to be drawn by oxen was the heavy, clumsy, wooden mold-board plow, which probably came about 1810. It held the stage in Indiana till about 1835 and finally gave way in turn to the cast iron, the steel, the chilled-metal, and the sulky plows all drawn by horses.

Horse-drawn Implements—In this period of horse-power supremacy appeared also, successively, the brush-drag, the all-wood "A harrow", the steel spike-tooth, the disk and the spring-tooth harrows. By 1840 or earlier the shovel, or jumping-shovel, plow appeared. For a decade or more this was the implement for "plowing" corn and, with its coulter attachment, was very serviceable among stones and the green roots of trees. About 1850 the double-shovel plow took the place of the single shovel in cultivation and it, in turn, gave way to the various forms of one-horse cultivators. At uncertain dates and at different points appeared various types of crude corn planters which were used locally for a time. In the 40's and later came the simpler forms of stationary and portable threshers,[1] driven by tread and sweep horse power. About

The two-row check wire corn planter appeared in Indiana about 1870. It is still in general use.—Courtesy International Harvester Company.

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[1] In 1839 the first threshing machine appeared in south-eastern Indiana. Report of the State Board of Agriculture for 1899-1900, p. 174.

1840 the wooden horse-rake appeared, with which a man and one horse could do the work of six or eight men with hand-rakes. By 1850 two-horse grain drills were coming into Indiana. About the same time or a little later, came the two-horse, two-row corn planter, and in the recent past the four row planters. About 1850 began the evolution of the horse cultivators, first the one-horse, then the two-horse straddle-row, later, the three-horse two-row, and very recently the tractor drawn four-row cultivator.

Other Horse Implements—The various reapers, harvesters, self-binders, mowing machines and corn harvesters, horse-drawn, have come into use in Indiana since 1840 and chiefly since 1850. Within the horse-power regime which still continues, the various haying implements and devices have been developed.

It thus appears that the period in which the horse has been the chief motive power on the farms of Indiana covers largely the evolution of modern farm implements and machinery to the present time. Practically all the various farm implements, with the exception of the heavier threshing machines and the larger gang plows, have been drawn by this highly useful animal, the farm horse.

Waning of Horse-power—Lovers of the horse will not regret that he has been superseded on the highway by the automobile and the auto truck, and that he is being relieved of much of the heavy work on the farm. Notwithstanding this, however, the horse will doubtless remain on the farm to perform the lighter services, for which he is so well adapted, and to minister to the pleasure and satisfaction of the farmer.

Mechanical Farm Power—Doubtless the earliest application of mechanical power to agricultural operations in Indiana was the use of portable, horse-drawn steam threshing engines, followed by steam and gas engines of the tractor type used in driving threshing machines and hauling them from place to place. These farm engines were introduced after the Civil War, and their use has constantly increased down to the present time.

The Farm Tractor—Following the heavy threshing-machine engines came the lighter gas-driven farm tractors, used in plowing, harvesting, seeding, and tillage operations. Though still in 1928 somewhat capricious in working, difficult and expensive to adjust and repair when out of order, gas farm engines, both stationary and traction, have passed the experimental stage of their development and are now generally considered a highly necessary and valuable form of farm power.

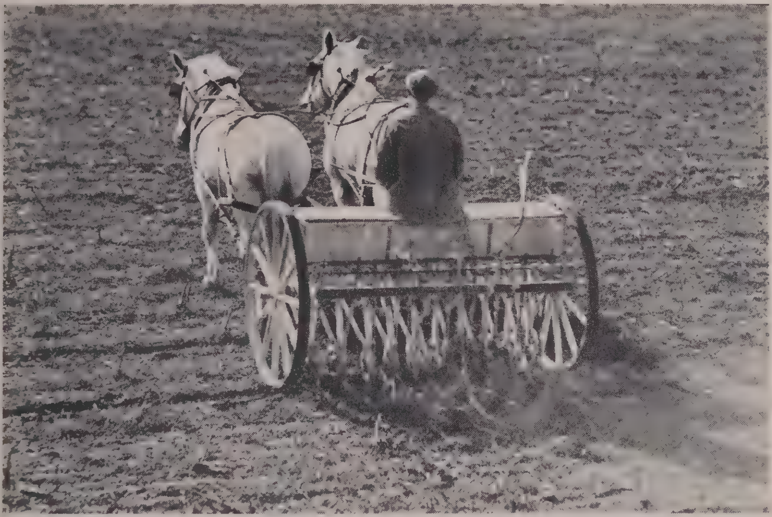
Advantages of the Tractor—The chief advantages of the tractor are that it does not have to be inured to work in the spring, does not suffer from troublesome insects and hot humid weather, as does the horse, and is capable of double or even triple service at rush times. The last named is a very decided advantage when seasonal operations must be finished within narrow time limits for best results.

Electricity on the Farm—Last but not least, came electricity with its manifold contributions to the comfort, enlightenment, and happiness of the farmer and his family. In its threefold function of furnishing heat, light, and power, electricity is the latest—if not the final—step in putting rural people on a par with their urban neighbors.

Although the end is not yet, we can truthfully say that the era of mechanical and electrical power in agriculture has been auspiciously ushered into Indiana. Horse power still remains, though within a decreasing sphere of usefulness. Manpower still continues and must ever remain, though increasingly in the form of brain power, to be used more and more in harnessing the tireless forces of nature for the advancement of agriculture in its service to mankind.

From Grain Growing to Mixed Husbandry—The era of mixed husbandry farming, or of some other fairly equivalent method of maintaining soil productiveness, may be said to have been generally inaugurated by the beginning of the present century. Hog raising began very early, but at first, the animals subsisted wholly on forest products. After a time a little corn was added to their forage to "finish" them before being driven to market. Wild forage was, too, the chief food for the cattle raised during the early stages of farm life. In these earlier years corn was converted into whiskey rather than into live stock products. Grain growing was, therefore, the general rule until about 1840, when large-scale cattle feeding on the edges of the prairies began to develop. The cattle fed on the native prairie grasses in summer and on corn and wild hay in winter. As the wild grasses soon began to disappear under close grazing, the cultivated grasses and clover came in to take their place.

Pasture and Forage Crops — Thus pasture and forage crops came into the plan of cropping. After corn-husking was over, the cattle were turned into the corn fields to get a part of their roughage from the cornstalks. Later, rye or oats was sometimes sown in the fall in the standing corn to furnish some green forage along with the dry. Gradually the practice of turning heavy cattle into the corn fields fell into disrepute among the better farmers because the poaching of the land, which was specially injurious to the texture of clay soils, largely offset the gains from the coarse roughage and the droppings of the cattle. This practice was continued, however, in some cases, with sheep and calves.



One form of the hoe drill. The drill came into use in Indiana in the early sixties of the nineteenth century. The one-horse hoe drill for seeding in the standing corn was first used in the state about 1885.—Photo by J. C. Allen & Son.

Exclusive Corn Feeding — With increasing corn production came the practice of hogging off the corn crop. In this period the grain for both cattle and hogs was almost exclusively corn. As there was then no shelter for live stock, heavy winter feeding of corn was the rule, to give the animals sufficient warmth to endure the rigors of severe weather.

Throughout this period—from 1840 to 1860 and even later—almost the sole object of the large live stock feeder was to convert forage and grain into the more concentrated and more valuable animal products.

Manure Wasted—With many, if not most, of the farmers of this period, there was little thought of the needs of the soil. The evidence of this oversight is shown in the general and prodigal waste of manure. The feeding was often done in woodlots, partly for the slight shelter thus afforded, but also that the fields might not be encumbered with litter or packed by the tramping of the stock. In many cases, permanent barns were erected on hillsides and beside streams, in order that the manure and litter might be washed away by the spring freshet.

Early Farm Leaders—While the foregoing instances showing indifference to soil renewal apply to a majority of Indiana farmers prior to 1860, we must not overlook the fact that for a score or more of years prior to that date there were intelligent, thoughtful, progressive farmers who were conducting their field and feeding operations with a view to the best results upon both soil and livestock. The improved methods of these leaders, who were quite thinly dotted here and there over the state, served as so many demonstrations for the enlightenment and encouragement of their less intelligent and less successful neighbors. With a growing knowledge of the needs of both soil and livestock, agricultural practice gradually improved.

Legume Growing—The common red and mammoth clovers were being grown for green manuring as well as for pasture, hay, and seed. Later and largely through the teachings of the School of Agriculture of Purdue University and the investigations and demonstrations of its Experiment Station, there were grown in turn alfalfa, cow peas, soybeans, and sweet clover, the last named being grown chiefly for soil renewal. Following the legumes came crop rotations, planned not only to utilize and husband soil fertility, but also to furnish better and more economical food combinations for the livestock.

Improved Livestock—For many years there have been fine herds of pure-bred swine and of registered cattle in Indiana—

a source of pride to every loyal Hoosier. But of far greater importance to the Commonwealth is the growing appreciation, by farmers generally, of the superiority of improved livestock for meat, wool, and dairy production, since fitness for these uses is, after all, the crucial test of its merit. In consequence, the scrub has been rapidly giving way in recent years to the graded, then to the cross-bred and the pure-bred animal.

Balanced Farming — A recent and very encouraging phase of mixed husbandry is the movement, inaugurated by the Farm Management Division of the Purdue Experiment Station, to standardize the production of crops and livestock on Indiana farms. Through the keeping of approved farm records, study of methods employed, the comparison of results attained, and the grading of the farms for economy and efficiency of management, gratifying progress is being made by leading farmers in conserving and utilizing soil fertility; in effecting a business-like distribution of labor; in securing a proper proportion of grain and forage crops; in determining the most profitable kind and quantity of livestock; and consequently, in obtaining the largest net financial return per farm.

Soil Renewal Necessary — Although mixed husbandry was becoming increasingly prevalent by 1900 there were many exceptions, especially on farms operated on the grain or cash-rent system of tenancy. However, the owners of even these rented farms were generally coming to recognize the absolute necessity of adequate soil renewal as a condition of securing continued profitable returns, and were seeking to govern their farm practice accordingly.

From a Living to a Business — In the early days of Indiana, as in other states of the Union, farming was a means of obtaining a meager subsistence from the soil. To many it offered the only opportunity to attain the desired end, a home. It was therefore usually engaged in from necessity rather than from deliberate choice.

The Goal a Home — The goal of the emigrant was a home and the pioneer farm was a means to that end. To secure a home, even though a very modest one, unstinted efforts were put forth, dangers were faced, sacrifices were made, privations and years of isolation were endured. Owing to unwholesome water, the malarial climate of the undrained wilderness, exposure, fatigue, insufficient food, or an unbalanced diet, severe and protracted illness was prevalent and, not infrequently, death ensued. All this to establish a home in which children might grow up, so that the human longing for congenial companionship might be satisfied. For this the rude cabin was built, a clearing made, and the long years of planting, sowing, reaping, and harvesting undergone. However, in most cases, these were happy years, because they marked the steady, though slow, approach to the end in view—a comfortable home which the farmer and his growing family could call their very own.

The one-row, two-horse corn cultivator came into use in Indiana probably about 1865. The two-row three-horse cultivator appeared about 1895. Both forms are in common use in the state.—Photo by J. C. Allen & Son.

Early Ideal — In the earlier decades the idea or the ideal of agriculture as a permanent pursuit was apparently not generally thought of. In not a few instances, the hope of the parents, after attaining a home and a fair competence, was to educate the children so that they could enter some apparently more dignified and less arduous calling.

The Goal More Land — With the passing of the years a new goal began to stir the ambition of the thrifty, frugal and prosperous farmer. Then it was land and more land. Under the improved conditions of a growing commercial agriculture, this vision of more land, of broad acres on which the children might settle as they married, became, for many, not only a fascinating, but also an impelling and a realizable dream. Industrious, inured to toil, with simple, inexpensive habits of living, with husky boys to help and strong healthy girls to lend a hand at rush times, the farmer resolutely set to work to attain the new goal. He prospered, the family domain enlarged, and, as the years passed, the children, one after another, were placed in nearby homes—homes which, though comfortable, were about as plain and as lacking in tasteful furnishing as the parental one. This typical farmer represented thousands of others. But there were still other thousands and many of them, with whom the outcome was far different. Some—many indeed—did not acquire more land, but succeeded only in rearing large families of children and in giving them a meager schooling, unsuited to their environment, which whetted their desire for a broader contact with (to them) an alluring outside world.

One form of the Marsh Harvester which was used in Indiana for a brief period beginning about 1870. Two men were required to bind the grain which fell on a platform at the rear of the machine.—Courtesy International Harvester Company.

Toil and Monotony—The case was much the same with thousands of other boys and girls whose fathers did secure more land. They shared with their parents the toilsome monotonous and unattractive farm life of the period, but not their vision and ambition. To these youths farming had become a ceaseless round of labor, a continuous grasping for more land which only meant to them more labor. To these boys and girls this was not farming to live and enjoy life, but merely farming reduced as a business to a steady, unvarying grind to accumulate. For these, as well as for the children of the less prosperous farmers, the country schools and the half-educated and untrained teachers of the period unwittingly did their part to turn the thoughts and faces of the pupils cityward.

Farm Exodus—This led to the beginning of an exodus of young men from the farm which was increased by the Civil War and recently greatly augmented by the World War. The girls of the farm, though perhaps in less degree, have also felt and responded to the attractions of urban life.

Farming Lacked Dignity—But by slow degrees and covering many years, the transition from farming for a rather bare subsistence to agriculture as a business was effected. Farming became a business—a good business for those who intelligently and industriously applied themselves to it. It lacked dignity, however. The farmer would speak of himself as "only a farmer". Thinking of himself and his calling thus meanly or over-modestly, he could not command the respect of others.

Nicknames for Farmers—Partly because of his low estimate of his calling, but largely because of his indifference to his garb and personal appearance when in town, the farmer was called a "hayseed", a "clodhopper", a "Reuben", a "hill-billy". He was of course necessary to produce the raw materials for food and clothing, but socially and even politically he was little more than a cipher.

A Farm of the Early 50's—The report of the State Board of Agriculture 1852[1] contains an essay by Dr. N. Tompkins of Bartholomew county in which appears the following description of a farm in the early 50's of last century:

"The hardest toil day by day scarcely brought remunerative crops, because misdirected. Ragged looking farms grown up with briars and weeds, surrounded by broken fences greeted the traveler on every hand. Long-horned, poor, shelterless cattle, a few small, poor burr-covered sheep, a pair of shabby long-tailed horses, rendered almost useless by hard work and poor food, a few lantern-jawed swine, the cheerless, comfortless home, the hingeless door, the one small window filled up with old hats and old clothing, the smoky mud chimney propped up by a long pole or fence rails, present a prospect and evidence of the falsity and ruinous tendency of the capital error that 'it is not necessary to educate the farmers' boys'."

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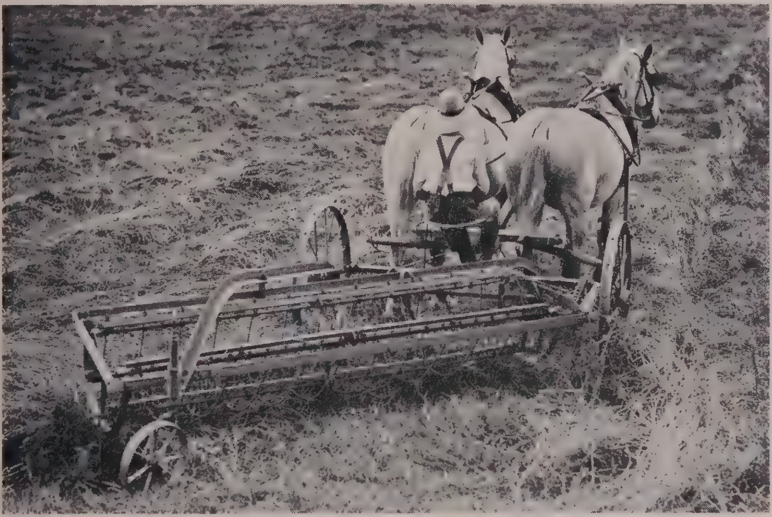
[1] P. 352.



The side-delivery hay rake appeared in the state about 1890. The form shown above is a combination tedder and side rake.—Photo by J. C. Allen & Son.

Period Indefinite — It is difficult to set the time limit of the completion of this transition in Indiana agriculture. We may complacently think or hope that it relates to a fully by-gone period; but there is the haunting fear that this traditional stage may still linger in out-of-the-way corners of Indiana as well as in other equally progressive states.

From Cultivator and Stockman to Citizen Farmer — From the foregoing somber picture of a past or rapidly passing stage of farm life, let us thankfully turn to the latest and most cheering transition now taking place. It had its faint beginning with the birth of the agricultural colleges, in the 60's of last century and has made its early sturdy growth along with the development of the experiment stations.

The Farmers' Changing View—Slowly at first, but surely and with steadily-accelerating progress in recent years, the farmers of Indiana have been changing their view-point and attitude and their farm practice. A strong, influential, and constantly-growing body of the farmers is gaining a higher and more adequate conception of the true dignity of the farming vocation, and of the fundamental importance of agriculture to the other industries and to the prosperity, progress, and wellbeing of the state and nation.

Improved Practice—Throughout the state there is taking place a vast improvement in farm practice. This includes better crops and better systems of cropping; improved, well-sheltered, and better-fed livestock; tidy premises and well-kept farms.

Better Farms and Homes—Modern, well-equipped and well-furnished dwellings set in well-arranged and tastefully-planted home grounds are now dotting the state. These several changes have made the country-side so attractive in many localities that the urbanities delight to ride out among the neat farms, with their up-to-date improvements and their fine flocks and herds.

Farmers Getting Together—But this is not all. The progressive farmers of Indiana are getting together, in large numbers, in organized groups for intelligent and efficient co-operation in buying and selling, in securing desired agricultural legislation, and in pushing measures for community uplift.

Boys' and Girls' 4-H Clubs—Within recent years there has been in Indiana and elsewhere a remarkable development of boys' and girls' club work. This work began in the way of competitive exhibits of corn, oats, wheat, bread, butter, cake, etc., grown or made by the boys and girls of the farm.

Under the stimulus of national encouragement as provided in the Smith-Lever, Smith-Hughes and Capper-Ketcham acts, 4-H club work has spread throughout the country. These 4-H clubs are now actively functioning in every county of

Indiana and thousands of boys and girls are engaged in the competitive production of livestock, corn, vegetables, fruit, foods, clothing, home decoration and household management; in both individual and team judging of these products; in systematically recording and reporting their work; in developing proper work, play and health habits; and in the formation of high ideals of competition and cooperation.

The boys and girls are thus gaining an invaluable practical training in their formative years and are being led step by step through a program that finally merges into the adult activities of the actual farmers and home makers.

The hay loader appeared in the state about 1875. Since the more recent advent of the side delivery hay rake these two implements effect a quick handling of the hay crop, thus avoiding damage by rain or over-curing.—Photo by J. C. Allen & Son.

Rural Life Advancement—A new interest among farmers is awakening in play and recreation as an essential part of the normal life of old and young. Social, educational, and religious community centers are growing; and commodious, well-arranged, and well-equipped community halls are springing up in many sections of the state. These several lines of advancement are ushering in a more prosperous state of agriculture, a more progressive attitude of the farmers and farm home makers, and a richer, more cultured, more satisfying, more contented rural life.

Uplifting Agencies — The more prominent institutions and agencies which are promoting this latest and most encouraging transition in Indiana agriculture include: agricultural legislation, both national and state; the national department of agriculture; the agricultural colleges and experiment stations; the country life movement inaugurated by Theodore Roosevelt; the Indiana State Board of Agriculture; agricultural and horticultural societies; livestock, dairy, millers', grain dealers', and home economics associations; the grange and farmers' clubs; farmers' institutes and farmers' short courses; county agents and other extension specialists; vocational teachers and many rural high schools; educational trains; agricultural papers and, more recently, the general and local newspaper press; fertilizer companies; the farm bureau; the state and local chambers of commerce; bankers' association; business and professional men of many of the cities and towns of Indiana; and many progressive, public-spirited, individual farmers.

The more distinctively agricultural means for promoting agriculture and rural life will receive consideration in succeeding pages.

CHAPTER IX.

SOIL IMPROVEMENT

SOIL EXPLOITATION was the general practice of the farmers in Indiana until about 1870. Prior to that date the farmers, generally, were unconscious or unintentional soil robbers; that is, they were drawing upon the accumulated store of plant food in the soil without attempting to restore fertility lost by cropping, leaching, or washing.

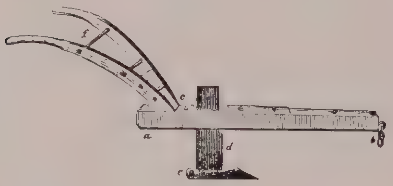
Soil Amendments—However, within this period soil amendments were undertaken and effected, in the removal of excess soil moisture and in the restoring of the organic matter lost by cultivation. Later, in the last quarter of the nineteenth century, the practice of partially restoring soil fertility was followed by an increasing number of farmers. Still later, efforts were directed toward restoring and maintaining the proper soil conditions for the growth of legumes.

Since the establishment of the experiment stations, authorized by Congress in 1887, a decided advance has been made in the study of the soils of Indiana and other states and in methods of soil improvement. The several important steps in soil improvement taken to date in Indiana are set forth in the following paragraphs in their probable order of time.

Surface Drainage—The earlier attempts at soil improvement, or more properly soil control, were directed to removing the surface water from shallow basins and the low-lying flat lands that received the surface wash and seepage from the higher ground.

Open Ditches—For this purpose open ditches were cut. which served fairly well while the new soil was still filled with organic matter and perforated with the open channels left by the decayed roots of the previous forest growth. The open ditch, however, proved to be but a temporary measure. As it was expensive to dig and keep open, and occupied much ground, making the planting, cultivation, and harvesting of crops difficult, it was soon abandoned for the covered drain.

Subsoiling—Probably next in order came the practice of subsoiling. Two forms of subsoiling implements were used, namely, the mole and the mold-board plows. The former merely stirred the lower soil in the bottom of the furrow made by the common plow. The latter lifted a portion of the subsoil to the surface to become mixed with the top soil. Subsoiling had a slight beneficial effect in the way of drainage, and the more deeply loosened earth gave freer root range for the growing crops. Good results were reported for a time, and subsoiling was advocated and practiced by a few farmers. But the practice did not become common because of the labor and expense involved, and the temporary character of the benefits secured.



The mole plow was used in Indiana about 1850 and later, in making temporary drains in compact subsoil free from rocks, cobble stones, gravel or quicksand. It was forced into the soil to the depth of 20 to 30 inches and drawn by several yoke of oxen or by a windless and cable, leaving a continuous opening, nearly round in cross section, which served fairly well as a drain for several years. Owing to the difficulty of securing a regular "incline" or "fall" it was best suited to land having a gentle and fairly uniform slope.—Courtesy of O. E. Robey, Michigan State College.

Under-drainage—Inspired, doubtless, by the large and permanent results of underdrainage, begun in 1835 by John Johnson on his farm near Geneva, New York,[1] the more intelligent farmers of Indiana became interested in this method of soil improvement as early as 1850.

Early Forms of Drains—As tile was not then available, mole, stone, pole, slab, and box drains were used for a time, but found to be only temporary expedients. If reports of farmers still living are correct, the use of drain tile in Indiana began about 1850.

Tile Drainage—At first horseshoe tiles were used. These were followed in turn by flat-bottomed, flat-sided, and, finally, by round tiles. By 1870 the leading farmers in fully one-third of the counties had begun tile draining. The draining of the lower land, which was submerged at times or visibly wet, first received attention.

Progress in Drainage Slow—Progress in draining the sloping ground and the heavy upland has been slow, and much yet remains to be done. It seems that an improvement so manifest and so permanent would have proceeded more rapidly. There are several reasons for the slow progress. Drainage is expensive. Many outlets had to be deepened. The mains often had to cross the farms of ignorant owners who blocked the movement. Legislation to secure right-of-way was tardy or reluctantly resorted to. Drain plans frequently failed to include the entire watershed. Consequently too small mains were generally laid which, later, had to be replaced with larger tile. Laying the tile too shallow or on an uneven grade, frequently required doing the work over again. Doubting Thomases often delayed drainage operations until slowly convinced, by the experience of others, that drainage pays.

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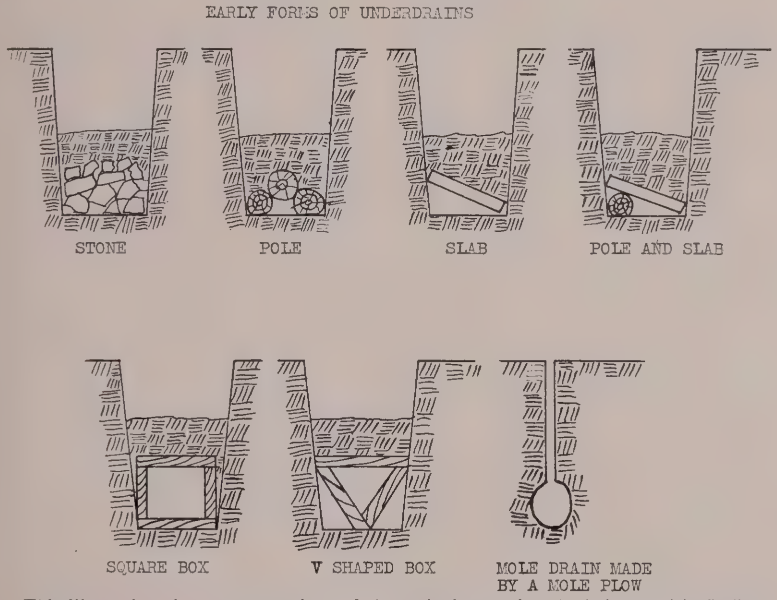
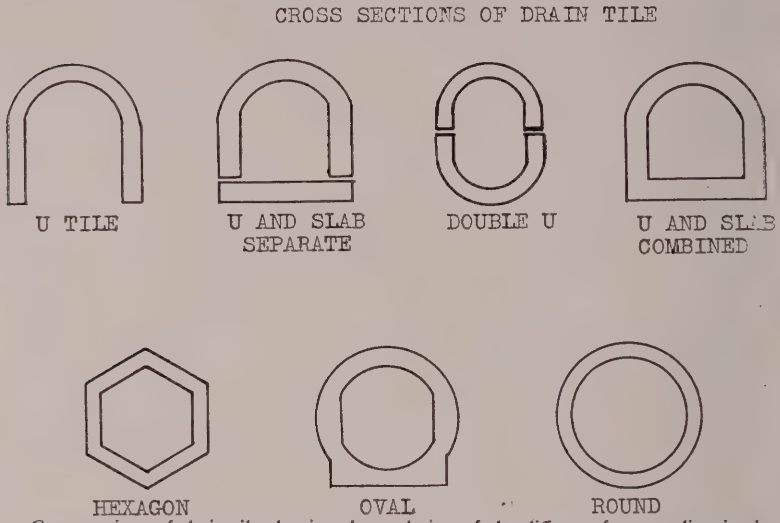
[1] Bidwell and Falconer: "History of Agriculture in the Northern United States," p. 318.



This illustration shows cross sections of the early forms of underdrains used in Indiana before the advent of the tile drain. These were all temporary expedients that were employed about the middle of the nineteenth century and later.—Drawing made by the Agricultural Engineering Department of Purdue University.

Drainage Experiments—In the nineties of last century small areas of wet peat or muck soils were drained under the auspices and direction of the State Agricultural Experiment Station. This was done to secure the degree of dryness necessary to ascertain the effect of special fertilizers in producing crops on these unbalanced soils.

Early in the present century, tile drainage and fertilizer experiments were conducted together by the Experiment Station, on the heavy clay soils of Clay and Decatur Counties. In these several cases the value of tile drainage in securing conditions for the profitable use of commercial fertilizers in crop production was amply demonstrated. The effect of the fertilizers will be referred to later.

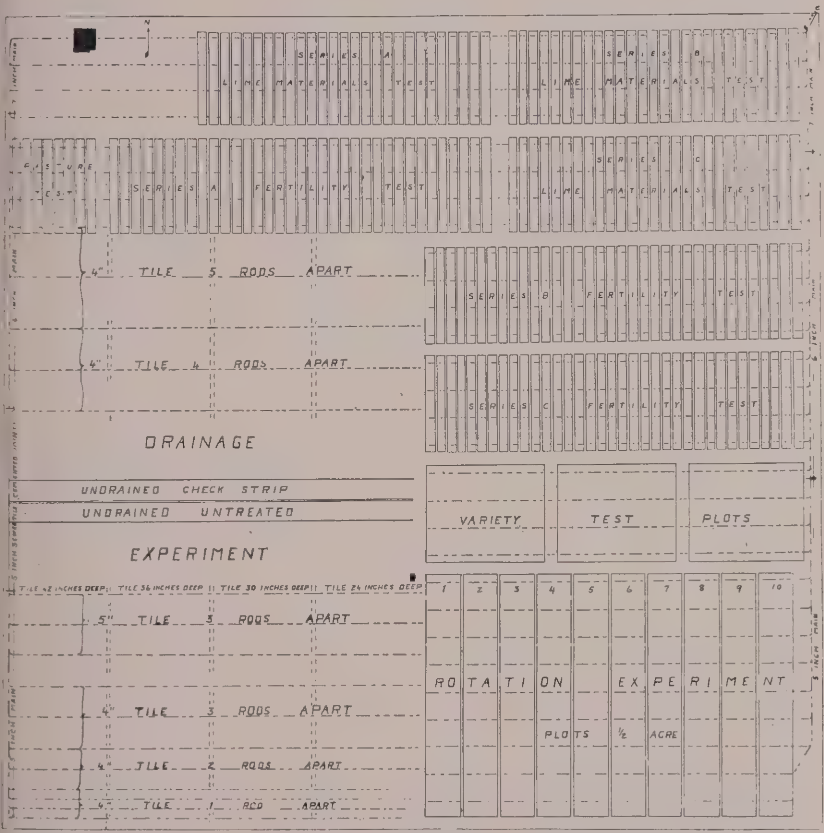


Cross sections of drain tile showing the evolution of the different forms ending in the round tile of the present period. Tile drainage in Indiana became common in the fourth quarter of last century.—Courtesy of the Department of Agricultural Engineering, Purdue University.

Draining the "Slash" Land—In 1920 an elaborate and carefully planned experimental system of tile drains was installed by the Purdue Agricultural Experiment Station on the flat, light-colored, heavy "slash" land in Jennings County. The lines of tile were laid one, two, three, four, and five rods apart, the several depths being 24, 30, 36, and 42 inches. The purpose of this experiment is to note the effect of partial and complete drainage on the yield and quality of the staple crops of that section. Beneficial effects of this experiment are already apparent, but some years must elapse before full results can be announced.

Restoring Organic Matter—Cultivation rapidly reduces the organic matter of the soil, making it more compact and less able to stand the extremes of wet and dry weather. When robbed of its organic matter the surface layer of stiff clays often becomes so impervious that water will stand for hours—and even days—directly over a drain. To make these dense clays more porous, so that the rain might enter the soil directly where it fell, and to render the worn surface layer of soil in general more mellow, the practice of turning under growing crops, called "green manuring', was begun in Indiana about 1850.

Green Manuring Crops — Weeds, buckwheat, oats, and rye were at first so used. When the growing of clover became general, it largely replaced the other crops, because of its imme-



A diagram of the Jennings County tile drained 40-acre field of so-called "Slash" land, a cold, crawfish, heavy silt loam. This field is owned by Jennings County and leased to the Purdue University Experiment Station for a long-time series of experiments with underdrainage, fertilizers, crop varieties, and plans of cropping. In a part of the field the drains of different sizes are placed at various depths and distances apart, the aim being to ascertain the most profitable amount of drainage for such soil. The field was laid out and drained in 1920 and the experiments were begun in 1921. As there is a good deal of such soil in the south-east part of the State, the lessons to be derived from these experiments will apply to a wide area of Indiana land.

diate and superior mellowing effect on the soil. At first only the clover stubble was turned under, after a hay crop and sometimes, also, a seed crop had been removed. Later, as the need became apparent, the whole clover was sometimes plowed under. Still later, other legumes, such as cow peas, soybeans, alfalfa, sweet clover, and broken-up corn stalks were so used. The chief aim, at first, was to restore lost vegetable matter to the soil.

Crop Yields Increased—Soon other effects of the legumes were manifest: namely, the increased yields and the improved quality of the succeeding crops. This led the more thoughtful farmers to surmise that legume crops, by means of their deep roots, brought plant food nearer the surface for the feeding of shallow-rooted crops. A later inference was that the legumes either rendered latent plant food more available or actually added to the soil's store of plant food.

Nitrogen Gatherers—The luxuriance of corn and wheat when grown after clover finally led to the conclusion that this legume, in some way, did supply nitrogen to other crops, and this, in turn, induced many farmers to accept the theory that the leaves of the legumes gathered the free nitrogen of the air and stored it in the soil in some form for the use of other crops. This theory held sway until the late eighties of last century, when it was discovered that the real nitrogen gatherers in the soil are the bacteria found in the nodules on the roots of clover and other legumes.[1]

Rotation of Crops—Two other things may be placed to the credit of the legumes. They permitted and made possible a wider range in cropping and thus opened the way for a profitable rotation of crops, which dates, in Indiana, from about 1850, but did not become common until about 1870. They also helped, by their contribution of nitrogen to the soil, to fix in the minds of the farmers the dictum "Feed the soil if you would have it feed you." However, the leading idea of rotation then was to equalize the crop demands on the soil by varying the time, manner, and depth of feeding, and by changing from hoed to small grain crops and from grain to grass and clover.

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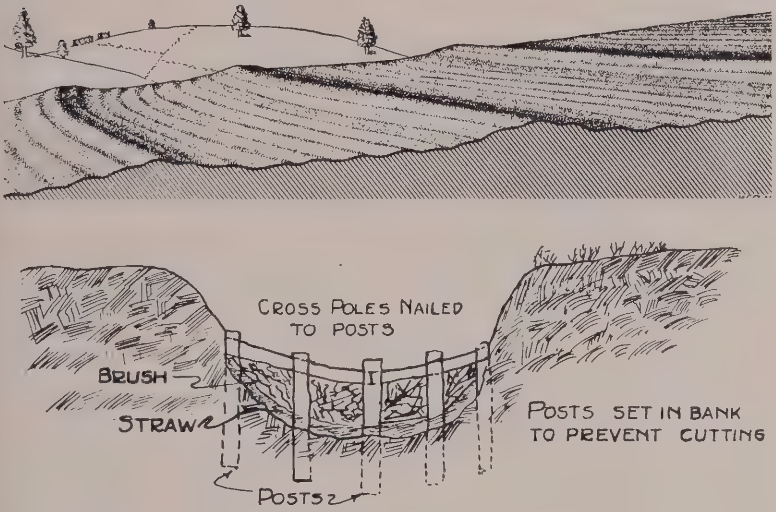
[1] S. F. Hinkle: Sandusky, Ohio, "Fertility and Crop Production," Chapters XIII and XIV.

Animal Manure—The seed-thought of feeding the soil, suggested by the effect of clover, began to grow. Thus attention was turned to the use of stable manure, which had been generally wasted prior to 1850. Indeed the conical piles of manure, below the stable windows and under the eaves, gave mute though strong-smelling testimony to the prevalence of this waste in Indiana as late as 1890. When the idea of feeding the soil had taken root, however, the practice of using manure to restore lost plant food to the soil was begun. The early use of manure was crude and wasteful by even the leading farmers. It was left in the barn-yard or straw-yard and exposed to the weather until well rotted before hauling to the field, so that it could be applied as a top-dressing without interfering with cultivation and without choking out portions of growing crops. Sometimes the manure was composted with muck, weeds, straw, or sod to increase the quantity, but the loss—often much more than half of its fertilizing value—went on just the same.


CROSS POLES NAILED TO POSTS
BRUSH
STRAW
POSTS SET IN BANK TO PREVENT CUTTING
POSTS

A perspective, or field view of a Mangum terrace. This form of broad terrace is adapted to sloping land subject to erosion, and it permits the use of the regular tillage, planting, and harvesting machinery. Where kept in repair, the Mangum terrace is proving successful in preventing soil erosion in many localities of southern Indiana. Lower drawing shows a successful method of checking erosion and filling up gullies in eroded ground. These field dams are placed at short distances apart in the gullies. The settling of sediment above each dam tends slowly to fill up the gullies to an extent that will finally permit, again, the use of abandoned land, or the seeding down to strong-rooted grasses that will stop further erosion.—Illustration furnished by the Department of Agricultural Engineering, Purdue University.

Leaching of Manure[1]—Soon after their establishment in 1887, the experiment stations called attention to the great losses of organic matter and of volatile and soluble plant food through the weathering of manure. This led to the practice, begun probably about 1885, of hauling the fresh manure directly from the stables to the fields. At first, the manure was dumped in piles to be spread at a 'more convenient season". This practice, which produced rank spots in the following crop, soon gave way to immediate spreading of the manure.

Manure Spreaders and Carriers—The manure spreader, which came into Indiana about 1885, not only saved time and labor, but also effected a far better distribution of the manure and made possible its greater utilization by the growing crop. A further saving of labor was effected a little later by the traveling manure carrier, which dumped its contents directly into the manure spreader. Other improved practices, including the use of the covered and cement-floored feeding-yard which began about 1885; the mixing of acid phosphate with the fermenting manure to prevent the escape of ammonia; and the quick transfer of the manure from stable to field, have enabled the progressive farmers to reduce to the minimum the losses of plant food from manure. Thus step by step, through advancing knowledge, have come a fuller husbanding and utilization, for soil improvement, of the plant food in manure and other crop residues.

Commercial Fertilizers[2]—The use of commercial fertilizers stimulated in part by Liebig's theory of mineral manures, which became known in Indiana before 1850, began in a few counties of Indiana in the third quarter of last century. By 1890, these fertilizers were used in fully one-third of the counties. Their use at first was often quite disappointing, through lack of knowledge of both the soil needs and the composition of the fertilizers used. It remained for the experiment stations to demonstrate how commercial fertilizer could be intelligently and profitably used.

Soil Investigations—Field experiments with fertilizers, designed in part to effect soil amendment, and in part to learn more of soil needs, were begun on the Purdue University experiment farm nearly a decade before the founding of the federal experiment stations. The requests of early agricultural students and their offers to cooperate in efforts to effect soil improvement in their respective sections led to extensive soil investigations by Purdue University which still continue. Soil analyses soon revealed the fact that the peat or muck soils and certain rich looking lands called "alkali" or "bogus" soils, which are chiefly found in the northwest part of the state, are generally lacking in the mineral elements of plant food. Many of these soils were found to be notably short of potash. Certain heavy clays in southern Indiana were found to be lacking in phosphates.

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[1] Hinkle: "Fertility and Crop Production," Chapter X.
[2] Hinkle: "Fertility and Crop Production," Chapter IV.

The two row corn cultivator came into use in the state about 1895 or 1898.—Photo by J. C. Allen & Son.

Potash and Phosphates — In many cases the application of potash to the muck soils and of phosphates to certain clay soils, produced striking and highly profitable results in improved quality and increased yield of succeeding crops. Since 1890, many and varied field experiments, designed in part to increase profits and partly to effect some phase of soil improvement, have been—and still are—conducted by the State Agricultural Experiment Station on the several soil types found in the different sections of the state.

Liming the Soil — A recent practice, beginning about 1900 and now becoming quite common, is the applying of lime, in the form of ground limestone or marl, to correct soil acidity.[1] Being readily soluble, the lime compounds gradually leach out of the upper soil, leaving an acid condition in which most legumes do not thrive. It is for this reason that applications of lime, from one to several tons to the acre, are made from time to time. In view of the wide extent of acid soils in Indiana, it is fortunate that beds of marl and deposits of limestone occur within easy reach of practically all sections of the state. In recent years liming is often the first step in the renovation of soils which have ceased to be profitably productive. Then legumes pave the way for other crops.

The following tables give the results of repeated experiments conducted by the Agronomy Department of the Experiment Station on types of soil representing large areas in their respective sections of the state. The returns show the importance and profitableness of applying lime and commercial fertilizers where needed:

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[1] Hinkle: "Fertility and Crop Production," Chapter VIII.

Results from Fertilizers on Light Colored Silt and Clay Loam Soils

LOCATION AND TREATMENT	AVERAGE YIELDS PER ACRE			Value of Increase per Rotation	Cost of Fertilizer	Net Return per Rotation
	Corn bus.	Wheat bus.	Hay lbs.			
Randolph County Experiment Field, 1923-1928:						
Unfertilized	39.6	12.5	2315			
100 lbs. 2-12-6* on corn and 300 lbs. 2-12-6 on wheat	48.4	22.1	2891	$23.48	$6.04	$17.44
Worthington Experiment Field, 1914-1928:						
Lime only	31.4	8.3	2841			
Lime, 200 lbs. 0-16-0 on corn and 200 lbs. 2-12-4 on wheat	34.5	13.2	3305	12.10	5.68	6.42
Jennings County Experiment Field, 1921-1928:						
Lime only	43.5	8.1	1996			
Lime, 200 lbs. 0-12-8 on corn and 200 lbs. 2-12-8 on wheat	60.8	15.3	2675	22.80	6.52	16.28
Vincennes Experiment Field, 1925-1928:						
Lime only	32.8	10.7	2695			
Lime, 100 lbs. 0-12-6 on corn and 300 lbs. on wheat	42.8	16.5	3110	16.59	7.04	9.55

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*These fertilizer formulas mean respectively the percentages of nitrogen, phosphate, and potash.

Results from Fertilizer on Light Sandy Soil, Culver Field, 1924-1928

TREATMENT	Average Yields Per Acre Corn bus.	Soybeans bus.	Wheat bus.	Hay lbs.	Value of Increase per Rotation	Cost of Fertilizer	Net Return per Rotation
Lime only	29.4	9.8	9.1	1802			
Lime, 100 lbs. 2-12-12* on corn and 300 lbs. on wheat + 16 lbs. nitrogen as top dressing on wheat in spring	36.0	10.4	17.2	2222	$17.57	$11.68	$5.89
Lime, 400 lbs. 2-12-12 on wheat at seeding time and 16 lbs. nitrogen as top dressing in spring	34.9	12.1	17.6	2308	18.98	11.68	7.30

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*These fertilizer formulas mean respectively the percentages of nitrogen, phosphate, and potash.

Results from Fertilizer on Muck, Wanatah Field, 1925-1928

TREATMENT	Average Yields Per Acre 1st Corn bushels	2nd Corn bushels	Soybeans bushels	Potatoes bushels	Value of Increase per Rotation	Cost of Fertilizer	Net Return per Rotation
Average 3 untreated plots	30.9	35.0	14.9	66.0			
300 lbs. 0-8-48* on 2nd corn and potatoes	48.4	55.3	21.5	188.6	$84.73	$20.88	$63.85

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*These fertilizer formulas mean respectively the percentages of nitrogen, phosphate, and potash.

Dredging the Marshes—When the uplands of the state, both timbered and prairie, were improved, there still remained vast areas of marsh and swamp land which would produce bountiful crops when properly drained. The remoteness of outlets, the levelness of these lands, and the large areas involved made their drainage a gigantic problem entirely beyond the reach of the individual farmer. There were needed the drainage engineer, the extensive surveys, the cooperation of many land owners, the investment of much capital, and legislation to authorize the undertaking and formulate legal procedure.

A disk drill. Both single and double forms of the disk drill appeared in Indiana in the nineties of last century. Perhaps the chief advantage of the disk drill is its ability to work in ground having coarse litter at or near the surface.—Photo by J. C. Allen & Son.

Drainage Legislation—Enabling legislation was finally passed which authorized dredge ditching within the county boundary. The law was changed later to authorize two counties to join in the undertaking and, still later, to permit the cooperation of all the counties involved in making a complete system of drainage canals for a given drainage basin.

When Dredging Began—Actual dredging operations in Indiana began about 1895 in the Kankakee basin, and continued actively until the beginning of the World War, when advancing costs of machinery and labor caused suspension of the work. During the twenty years of dredging, from about 1895 to 1915, large tracts of marsh land were reclaimed. When the Kankakee system is finally completed, by lowering its main outlet at Momence, and by cutting more lateral canals, a still larger area will become available for a specialized and highly profitable type of agriculture. When completed these drainage canals, by serving as outlets to systems of tile drains to be laid in the surrounding higher levels, will materially widen the area of drained land. The draining of the Kankakee region illustrates the method of reclaiming other extensive areas of marsh land.

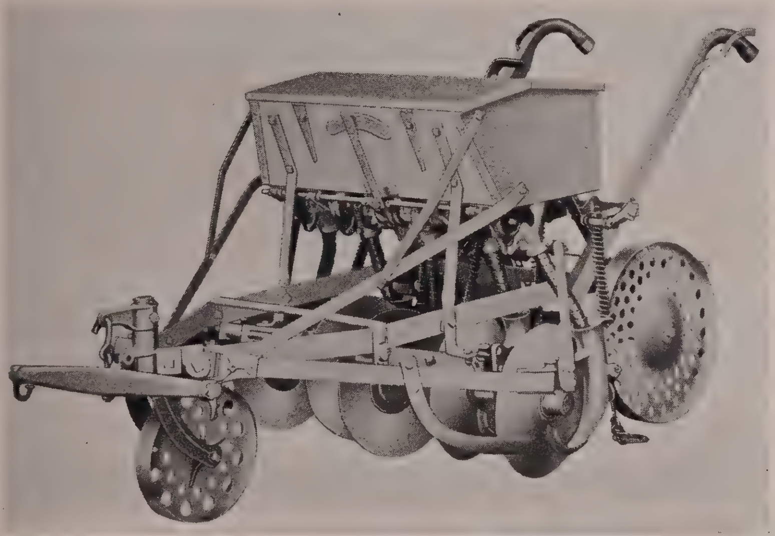
Soil Surveys—In 1902 the U. S. Department of Agriculture began making soil surveys in Indiana. This continued until 1908. In 1912 work was taken up jointly by the U. S. Department of Agriculture and the State Department of Geology and carried forward six years. Beginning in 1919 the soil survey work has been conducted jointly by the U. S. Department of Agriculture and the Purdue University Agricultural Experiment Station. The Indiana soil survey work began in Posey County and, with the exception of five years (1907, 1909, 1910, 1911, and 1918), has continued from 1902 to the present time and is still going on. By 1928 soil surveys had been completed in 36 counties, representing most, if not all, of the principal soil types in the state.

Terracing Hillsides—The great losses of plant food through washing and erosion of hill lands in southern Indiana and the tendency of some of these lands to slump badly when very wet, brought to the Experiment Station another class of soil problems. To assist the farmers in solving these problems, the Agricultural Engineering Department of the Experiment Station in 1921 began conducting demonstrations on the use of the Mangum terrace.

Mangum Terrace—This form of terrace, a broad low ridge like the crowning surface of an improved road, is used on the gentler cultivated slopes to divert the rainfall from its natural course directly down the hillside to one closely following the line of contour to an outlet that can be controlled. Experiments have shown that the Mangum terrace is effective on most slopes which do not exceed a vertical drop of five feet in a horizontal distance of one hundred feet. Each terrace, or rather the shallow trough on its uphill side, must carry only its own water to the outlet. That is, the water must not flow from one terrace onto another, as this would increase its volume until erosion would result. The Mangum terrace changes the surface of the field so slightly as not to interfere with the future planting, culivation, and harvesting of the crops.

Field Dams — In cases where erosion has cut a gully in the soil, the terrace is supplemented by small dams of boards, stone, brush, or straw, to prevent or check further erosion and eventually fill up the gully above the dam.

Since the beginning of this work in 1921, terracing experiments and demonstrations have been carried on in eighteen southern Indiana counties. The work will be continued until the feasibility and practical value of the Mangum terrace for the various types of cultivated hill lands in the state have been thoroughly demonstrated.



A one-horse disk drill adapted to seeding in the standing corn. Both disk and hoe drills now have fertilizer attachments.—Courtesy American Seeding Division, Oliver Farm Equipment Company.

In the foregoing pages the writer has sought to trace the gradual growth of a body of knowledge concerning the nature, needs, and uses of the soil which has brought about an even more gradual transition from the practice of soil exploitation to that of an intelligent conservation and utilization of soil resources. We have noted that federal and state agencies, by means of soil surveys, are throwing a flood of light on the various soil types. This means that when the proper treatment of a given soil type is determined, it will serve in the several sections where this type of soil is found.

Other Soil Investigations—Since its organization in 1887 the State Agricultural Experiment Station has been conducting an increasing series of experimental soil investigations and demonstrations which, up to 1928, included twenty-eight well distributed points in the state. The purpose of this work is to get the response of muck soil, of so-called alkali and bogus soils, of silty clay, sandy, and loam soils, and of slumpy cultivated hill lands, to carefully planned treatments, including drainage, fertilization, terracing, and systems of cropping.

In the several ways named, a substantial foundation of definite knowledge is being laid for rational soil management, which, if intelligently and persistently followed, will insure the permanent and profitable productiveness of Indiana soils.

CHAPTER X.

INTRODUCTION AND IMPROVEMENT OF FIELD CROPS

1. CROP INTRODUCTION

WITH the single exception of Indian corn, all of the important field food crops of Indiana were introduced with or since the advent of the white man. The early settlers brought with them the seeds of the common field crops that they had grown in the older settlements to the east and south of Indiana.

Early Crops—English travelers[1] found corn, oats, wheat, rye, buckwheat, barley, red and white clover, Canada and Kentucky blue grass growing in Indiana before it became a state in 1816. Although David Thomas[2] (1816), says, "This country is wretchedly cultivated," David Baillie Warden[3] (1819), states that on the best lands yields of 50 to 60 bushels of corn and of about 50 bushels of wheat per acre were reported, the latter weighing 58 pounds to the bushel.

Seed Distribution—The national policy of introducing new crops was inaugurated by Congress in 1840 when the first appropriation was made for the gathering of agricultural statistics and the collection and distribution to farmers of new and promising agricultural seeds and plants. As there was then no commissioner of agriculture, and because of his keen and intelligent interest in agriculture, the administration of this work was entrusted to the Commissioner of Patents, the Honorable Henry L. Ellsworth, who resided for a time at Lafayette, Indiana, where he directed large farming interests. The actual distribution of seeds, at first, was mainly through members of Congress to their constituents in their several districts.

In this way many new or little known seeds came to Indiana from time to time. In many cases they proved to be of little value because they were not well adapted to Indiana agricultural conditions. Occasionally a valuable new crop or an improved variety of a known crop was introduced. The Chinese saccharine sorghum is an example of a new crop thus introduced.

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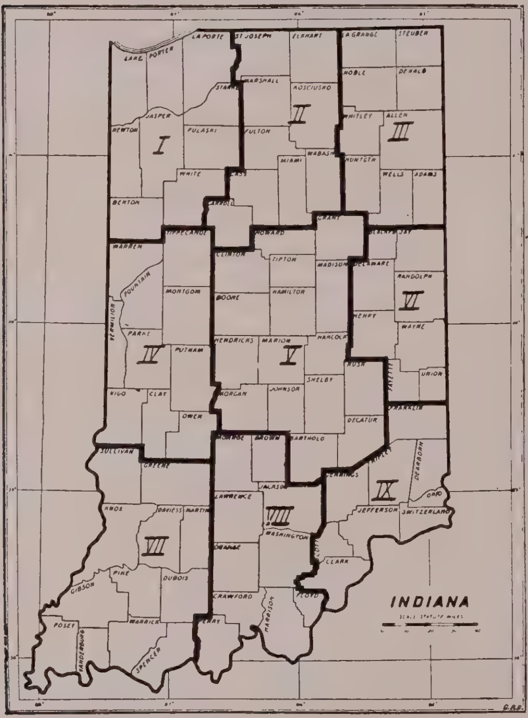
[1] "Indiana as Seen by Early Travelers," pp. 195, 200, 230.

[2] Ibid, p. 46.

[3] Ibid, p. 230.

Interest in Better Crops — Some of these seed novelties were carefully tested and this naturally led the more progressive farmers to give better attention to the commonly grown crops of corn, oats, wheat, etc. A growing interest was also manifested in new varieties of these crops, and this led to the wholesale introduction of highly advertised so-called new farm seeds. For a number of years prior to the enactment of the Indiana Pure Seed Law, some unscrupulous firms exploited the more credulous farmers by foisting upon the market various farm seeds (sometimes known varieties under new names) said to be wonderfully prolific. At least one firm was said to have sold from the same bag several so-called new varieties of wheat to suit the requests of the purchasers. A wholesome check on this nefarious business resulted later from the

CROP REPORTING DISTRICTS



This map shows the crop reporting districts of the state as arranged by the Department of Agricultural Statistics of the Purdue Experiment Station.

establishment of the Experiment Station in 1887 and, still later, from the enactment of the Indiana Pure Seed Law in 1921.

Improved Varieties Introduced—Through various agencies, improved varieties or strains of practically all the previous grown crops, as well as new ones, were introduced into Indiana from time to time. In most cases the exact time of introduction is uncertain. But reports from the several counties indicate that the dates given in the following paragraphs or in the appendix are approximately correct.

Maize or Indian Corn—Maize (derived from the Haytian word "Mahiz") is declared by Harshberger to be "the most important and most distinctive American crop."[1] It was the chief food crop of the American Indians, and on several occasions it saved the early English immigrants from starvation. As "corn" was the common English term for a bread grain, this New-World crop, widely cultivated by the Indians, came to be known as "Indian corn". With the passing of the red man, the word Indian was naturally dropped from the name. Since then the single word, corn, has survived as the name of this great crop in common use by English-speaking people.

Corn is said to be a native of Mexico[2] or Central America. Though a sub-tropical plant, corn is grown throughout the United States and in southern Canada. Doubtless no other food crop has contributed so largely and in so many ways to the well-being of the human race.

Winter Wheat—The growing of wheat in Indiana probably became a common practice about 1816. However, early travelers mentioned wheat as an Indiana crop late in the 18th century.[3] Volney noted the absence of wheat at Vincennes in 1804.[3] Horse and floating mills for grinding corn and wheat were observed in 1816,[3] and grist mills were established in New Albany and Vincennes in 1819.[3]

The fertility of the virgin soil was so great that wheat could not be successfully grown until several crops of corn had been produced. As the adaptation of wheat to different soils is rather limited, scores of varieties suited to different sections of the state have been selected or developed. Owing to frequent winter-killing and recent low prices, there is a growing tendency to reduce the wheat area in Indiana. At the present time (1933) many Indiana farmers are cooperating with the U. S. Department of Agriculture in a systematic effort to decrease the wheat acreage under the so-called "allotment plan", of the administration of President Franklin D. Roosevelt, for reducing the wheat surplus and securing wheat prices in parity with those of other commodities.

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[1] Bailey's "Cyclopedia of American Agriculture," Vol. II, p. 398.

[2] Ibid, Vol. II, p. 404.

[3] "Indiana as Seen by Early Travelers," pp. 8, 10, 135, 200.

Wheat is an Old World plant, native of the Mediterranean region.[1] It is the chief bread grain and its use antedates history.

Oats — The oat crop ranks next to wheat in Indiana. Although grown chiefly for its grain, oats and field peas are sometimes sown together for hay. Oats is also a good emergency pasture crop. The oat plant is said to be native in the temperate regions of both the Old and New World.[2] It thrives best in the cooler temperate climate, and is therefore more extensively grown in northern Indiana than elsewhere in the state. Northern grown varieties—especially those from Russia—are most prolific. Winter oats is being tried experimentally along the Ohio River, but it is not a commercial crop in Indiana.

Rye — Winter and spring rye are both grown in Indiana. Winter rye is the more valuable. It makes a good fall, winter, and early spring pasture. Because of its greater winter hardiness, rye sometimes takes the place of wheat in the crop rotation. Rye is said to be a native of Southeastern Europe.[3]

Barley — Barley is not as important a crop in Indiana as oats or rye. Like oats, it is better suited to northern Indiana and still farther north. Barley is used in the state as a feed for livestock. Though fed chiefly as a grain, barley is sometimes grown with field peas for a green forage crop. Barley is thought to be a native of Western Asia.[4]

As white clover and timothy were observed in Indiana early in last century by westward travelers,[5] it seems highly probable that seeds of these crops, and doubtless of some other clovers and grasses, were first brought into the state by roving bands of Indians, by the earliest immigrants, and in the bodies of domestic animals brought from older settlements. At any rate, the cultivated grasses are said to have sprung up wherever the native grasses were closely pastured.

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[1] Hitchcock in "Bailey's Cyclopedia of American Agriculture," Vol. II, p. 375.

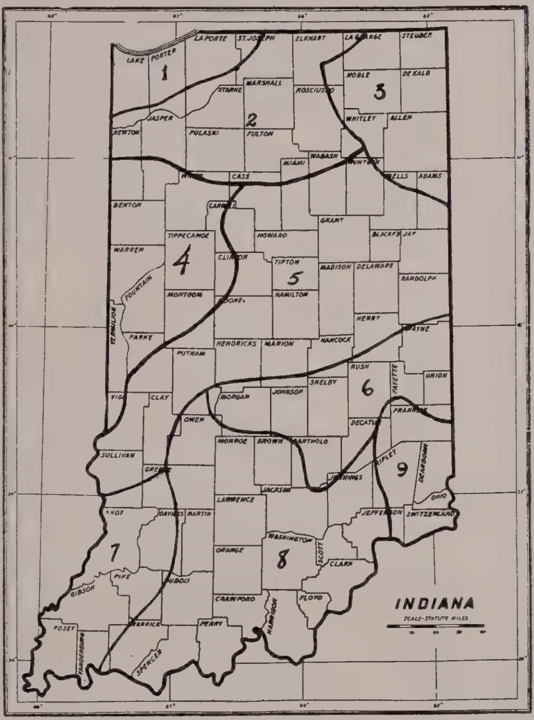
[2] Bailey's "Cyclopedia of American Agriculture," Vol. II, p. 371.

[3] De Candolle in Bailey's "Cyclopedia of American Agriculture," Vol. II, p. 560.

[4] Bailey's "Cyclopedia of American Agriculture," Vol. II, p. 560.

[5] Lindley's "Indiana as Seen by Early Travelers," pp. 35-58.

TYPES OF FARMING MAP OF INDIANA



1. Dairy and truck
2. Grain and truck
3. Gen'l grain and livestock
4 Corn and oats
5. Central grain and livestock
6. Corn, wheat and hogs.
7. Grain, fruit and melons.
8. Gen'l farm; dairy fruit, misc.
9. Dairy hay and tobacco.

This map shows the prevailing types of farming in the several sections of the state as arranged by the Farm Management Department, Purdue University.

Clover Generally Grown — Red clover, possibly both medium and mammoth, was commonly grown in Indiana by 1850, in half of the counties, and the next 25 years doubtless witnessed its spread into practically all the other counties. It is a justly popular crop in Indiana because of its adaptability to the different soils when they are not too acid, and because its quick growth enables it to fit well into the crop rotation. The alsike clover has been commonly grown for years on the colder heavy soils as a pasture and hay crop. The white clover is widely prevalent in lawns and pastures. The chief forage clovers are natives of the Old World.[1]

Timothy Grown—Timothy early established itself as the premier hay crop of Indiana, but in the best farm practice it has since largely given place to clover because of the superior feeding and soil-renewing value of the latter crop. During and after the Civil War timothy was extensively grown and shipped out of some southeastern river counties, greatly to the detriment of their soil fertility. Timothy is a native of Europe.[2] It is called timothy in this country because the seed of this plant was taken from New York to North Carolina in 1720 by Timothy Hanson. It is known as "Herd's grass" in New England as it was propagated there from seed by a man named Herd.[3]

The twine binder which was first used in Indiana in the early eighties of last century quickly displaced earlier forms of grain harvesters, including the wire binder. The twine binder is still the principal grain harvester in Indiana.—Courtesy International Harvester Company.

Red Top—Red top has long been grown on low-lying wet lands. In some locations in southern Indiana, especially on the wet "slash land", it is preferred to timothy for both hay and pasture. It is more nutritious than timothy and will grow on acid soils.[1] Its date of introduction into Indiana is uncertain.

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[1] Bailey's "Cyclopedia of American Agriculture," Vol. II, p. 232.
[2] Ibid, p. 370.
[3] Ibid, p. 370.

Orchard Grass — Orchard grass, which has probably been grown to a limited extent in the state for half a century, doubtless spread into Indiana from Kentucky by natural means and through commercial channels. It is rather widely distributed in the state but not extensively grown as a separate crop. It is sometimes sown with clover instead of timothy because it matures about the same time as clover. It is also sown with other grasses for pasture. Because of its habit of growing in bunches, it is not so suitable for pasture when sown alone. Orchard grass is grown commercially in Clark County for its seed. By some, regarded as a native of America but usually considered to be an Old World grass.[2]

Blue Grass — Kentucky blue grass (so-called because extensively grown in the limestone region of Kentucky) or June grass *(poa pratensis)* appeared very early in Indiana in the closely-grazed native pastures. Its advent into Indiana was probably in the first decade of the last century. It is now found in all lawns and permanent pastures. Although its growth is often checked in midsummer, it is really unsurpassed as an early and late pasture grass. It is native in the northern part of both hemispheres and widely grown.[3]

The Millets — Several members of the millet family (native of the Old World)[4] have been grown for many years in Indiana. They were somewhat commonly grown in the later pioneer period, as a supplementary forage crop, before the better hay grasses had become well established. They were often grown as a "catch crop" because of the failure of another forage crop or after another had been harvested. When cut soon after the heads formed, the millets make a fair hay, but if the seed is allowed to ripen, it is said to have an irritating effect on the kidneys of the horse.[5]

Peppermint — The growing of peppermint (introduced from Europe) as a field crop in Indiana began about 1840. In 1847 this plant was brought to LaGrange County from Michigan by an early settler, Hawley Peck. It is quite extensively grown on the well drained muck soils of northern Indiana and southern Michigan.

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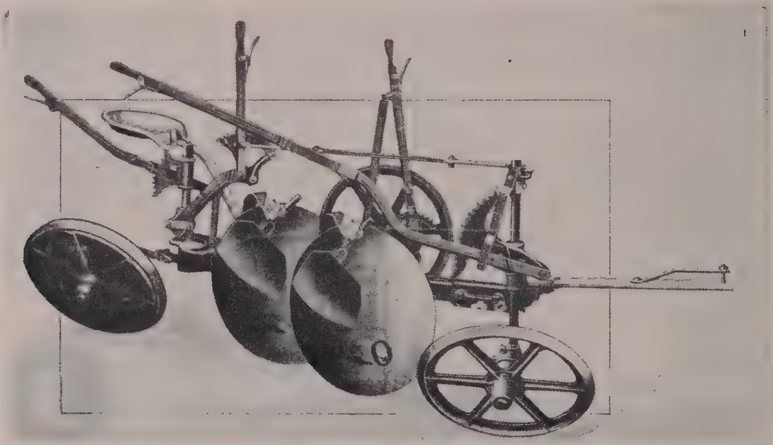
[1] Bailey's "Cyclopedia of American Agriculture," Vol. II, p. 444-5.
[2] Ibid, p. 373.
[3] Ibid, p. 373.
[4] Ibid, Vol. II, p. 369.
[5] Ibid, Vol. II, p. 473.

After distillation of the oil, the mint crop is dried and fed as hay to livestock. Its utilization as hay began about 1890. The farmers consider mint hay equal or superior to timothy hay. It is said that, when the oil is thoroughly extracted, mint hay may be fed even to dairy cows without imparting a mint flavor to the milk.

Sorghum—In 1856 the Indiana State Board of Agriculture received from the Patent Office, Washington, D. C., a quantity of sorghum seed (Chinese sugar cane) for trial. The seed was distributed to the county agricultural societies and members of these societies, in several localities of both northern and southern Indiana, grew small patches of sorghum in 1857. An interesting account of these early field tests is given in the annual report of the State Board for 1857, on pages 257-280 and 639-643.



The disk plow made its appearance in the state about 1890. Its rotary action effects a greater pulverization of the furrow than the mouldboard plow. It is said to be adapted to use in very compact soils and also in stubble ground.—Courtesy International Harvester Company.

The growing of sorghum in a small way spread rapidly, as the U. S. Census of 1860 report it in every county of the state except two—Benton and Newton. Sorghum is still grown in small areas for both forage and molasses. The first samples of molasses had a so-called "green" taste. The modern improved practice of reducing the sorghum juice secures a really good syrup pleasing to many palates. Cultivated sorghum is an Old World plant, believed to be indigenous to tropical Africa and perhaps also to India.[1]

Canada Peas — Canada field peas have been grown to some extent in Indiana with barley or oats as a green forage for sheep and swine and sometimes as a hay crop. They are also grown alone in Indiana for the canneries. They were doubtless introduced in the second half of last century. The acreage for forage is not as extensive in Indiana as in sections farther north. Of European origin, a wild and perhaps ancestral form is still found in Greece.[2]

Rape — Dwarf Essex rape has been grown in small lots on the livestock farms of Indiana for perhaps forty years as a midsummer pasture for pigs and lambs. Its use in the state probably became common in the last decade of the nineteenth century. Rape is an Old World plant, perhaps a native of England.[3]

Alfalfa — Alfalfa is reported to have been introduced into Franklin County in 1848. Western-grown alfalfa seed came into several other counties in the eighties of last century, and by 1900 this valuable legume was being grown in 40 or more counties. Its introduction into most, if not all of the other counties was doubtless completed in the first quarter of this century. Alfalfa is a native of south-western Asia.[4] It is the chief forage crop of the irrigated regions and the western plains. It is now widely distributed in the United States. The acreage of alfalfa is steadily increasing in Indiana as the farmers learn how to grow it successfully. Hardy strains of alfalfa have been introduced by the experiment station and extension forces of the state, and their general adoption by the farmers has greatly reduced the losses by winter killing. Owing to its ability, when once established, to endure hot, dry weather, alfalfa in some cases is taking the place of red clover in crop rotation. It is also being sown with red clover in some instances. Its superior drought resistance and its great value as a hay and pasture crop assure it a permanent and important place in Indiana agriculture. (Note.)

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[1] Ballin Bailey's "Cyclopedia of American Agriculture," Vol. II, p. 574.
[2] Bailey's "Cyclopedia of American Agriculture," Vol. II, p. 510.
[3] Ibid, Vol. II, 530.
[4] Ibid, Vol. II, p. 192.

Cow Peas—The cow pea was reported growing in Owen and Warrick Counties as early as 1885. This crop was introduced into most of the counties of Indiana between 1890 and 1920. According to reports, cow peas are, or have been grown in at least ninety counties of the state. The cow pea is highly esteemed by some as a hay crop but its habit of growth in long, trailing vines makes it difficult to harvest and handle. It has long been grown in the southern United States where it is an important forage crop. The cow pea is grown more extensively in southern Indiana than elsewhere in the state. The cow pea is a native of India and southwestern Asia.[1]

The manure spreader appeared in Indiana about 1880 or 1885. This implement not only lightens the labor of the farmer but effects a much better distribution of the manure than hand spreading.—Photot by J. C. Allen & Son.

Soybeans—Soybeans closely followed cow peas into Indiana. It is reported that this crop was introduced into Bartholomew, Dearborn, Fountain, Hendricks, Huntington, La-

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[1] Bailey's "Cyclopedia of American Agriculture," Vol. II, p. 260.

Note—The hardiest strain of alfalfa is known as Grimm, developed in Carver County, Minnesota, by Franz Alois Grimm from German seed imported from the village of Kulsheim in the Grand Duchy of Boden, Germany.—Charles J. Brand in September-October, 1934, "Fertilizer Review," pp. 8, 9, and 13.

Grange, Randolph and Washington Counties prior to 1900. The fact that it is doubtless now grown in every county of the state shows that its spread has been rapid. Like other legumes, the soybean is a valuable soil-renewing crop. It is chiefly grown in Indiana, however, for its seed, which has a high feeding value as a supplement to corn. When thickly sown and harvested at near maturity, but before the leaves drop, soybeans make a nutritious and palatable hay, and even the threshed straw of the mature crop is readily eaten by livestock.[1] Some dairymen consider soybean hay superior to alfalfa or red clover in the production of milk. Though recently brought into the state, soybeans are proving to be a very important and profitable crop. The soybean is thought to be a native of southeastern Asia.[2]

Sudan Grass[3] — Sudan grass, a recent importation from Africa by the U. S. Department of Agriculture. It was first grown at the Indiana Experiment Station in 1914.. It is a tall leafy grass closely related to the sorghums with which it hybridizes readily. It is an excellent pasture and a fair hay grass, but it is not likely to displace timothy or clover for hay where these do well. In Indiana it will doubtless prove most valuable for mid-summer pasture. Its quick growth and easy eradication make it a promising emergency pasture and hay crop. Sudan grass is a native of Europe, Africa, and Asia.[4]

Sweet Clover — Sweet clover has been a hardy, thrifty, roadside weed in Indiana for many years. About the opening of the present century it began to gain recognition as a soil-renewing crop on the poorer soils of southeastern Indiana. It has since become very popular as a soil builder, for which purpose it probably has no superior. It grows luxuriantly on all worn, heavy, non-acid or properly limed soils. Its quick strong growth in early spring makes it valuable for early pasture. Its strong odor, rank taste, and coarse woody stems, when it is mature, render it less suitable for hay. Its best service to agriculture will doubtless be as a pasture crop and in restoring the vegetable matter and soil nitrogen to naturally thin or badly worn soils. When once established on such soils and allowed to stand for a few years it will fit them to take again their place in the regular cropping system. Sweet clover belongs to the genus Melilotus, which is native to Europe, Africa and Asia.[1]

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[1] Purdue Experiment Station Bulletin No. 346, p. 24.
[2] Bailey's "Cyclopedia of American Agriculture," Vol. II, p. 583.
[3] Farmers' Bulletin 1126, U. S. Department of Agriculture.
[4] Duggar: Bailey's "Cyclopedia of American Agriculture," Vol. II, p. 467.

Lespedeza — Japanese Lespedeza or Japan clover has been gradually coming into southern Indiana from the south for perhaps a quarter of a century. Although it responds generously to applications of lime and fertilizers, it will grow readily on worn and acid soils on which red clover will not thrive. It is an annual, and is self-seeding even when closely pastured. It is, therefore, an admirable permanent pasture crop. Its two chief advantages over the common clovers are its nonsensitiveness to acid soils and its ability to maintain itself in a permanent pasture. Japan clover is now well established in the southern third of Indiana and is slowly spreading northward.

The corn binder came into use in Indiana early in the present century. It has been chiefly used in cutting corn for the silo. The corn shocker appears not to have been used in the state to any considerable extent.—Photo by J. C. Allen & Son.

Another variety or strain of lespedeza is the Korean clover introduced into the United States in 1919.[2] In 1923 the Experiment Station obtained a small quantity of Korean seed from the U. S. Department of Agriculture. It is now on trial at several points in the state and has been successfully grown very near Indiana's northern boundary. Its habit of growth is stronger than that of the Japan clover which it resembles. The Korean clover ripens its seed about two weeks earlier than the Japan variety, and may therefore sustain itself a little farther north than the latter. Although its seed pods are borne a little higher than those of the Japan clover, it has thus far maintained itself well as a permanent pasture crop. Where tried in Indiana it has endured hot dry weather well, and this may prove to be another advantage over the common clovers.

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[1] Duggar: Bailey's "Cyclopedia of American Agriculture," Vol. II, p. 467.
[2] Circular 317, U. S. Department of Agriculture, July, 1924.

County Agents Introduce New Crops—With the establishment in Indiana of the county agricultural agent work in 1913, a fresh impetus was given to the introduction of improved crops and of improved agricultural practices in general. The rapid spread of alfalfa, soybeans, and sweet clover is largely due to the cooperation of the county agricultural agents with the Experiment Station and the leading farmers in their several counties.

Northern Grown Seed Potatoes—The good work of the county agents is further shown in the very rapid introduction of improved varieties of disinfected, certified, northern-grown seed potatoes. Beginning in 1918 with a shipment of 25 bushels of northern seed potatoes into one county, the business quickly enlarged to 200 carloads in 1926 which were distributed to, and planted in, every county of the state. From this northern-grown, disease-free seed, much heavier yields of better potatoes have been secured.

Advantages of Crop Introduction—In the preceding pages of this chapter all of the important field food crops that have been introduced into Indiana have been mentioned. The improved varieties of the several cereal grain crops that have been brought into the state from time to time have proved a great asset. Indiana agriculture has been greatly enriched, also, by the introduction, one after another, of the several legume crops. By means of these legumes the problem of maintaining soil fertility along with continuous profitable crop production has been rendered comparatively easy of solution, and the feeding rations for all classes of livestock have been vastly improved.

2. Crop Improvement

Let us next consider the several means that have been employed in effecting improvement in the yield, quality, and adaptability of the grain and forage food crop of Indiana.

Lines of Crop Improvement—The principal lines of crop improvement that have been followed in Indiana include: (1) soil adaptations, (2) crops relations, (3) crop rotation, (4) tillage, (5) crop fertilization, (6) protection during growth, (7) time and method of harvesting, (8) curing and storing, (9) seed selection, (10) seed testing, (11) seed disinfection, (12) plant breeding, (13) wide and repeated field testing to determine range of adaptability. Some of these lines of crop improvement have been followed by the farmers for many years and with increasing efficiency. Others have been introduced or more carefully employed by the experiment station.

The corn picker has been used in Indiana since about 1915. It is said to husk as fast as five or six men. Some users claim that it husks as clean as hand huskers, while others declare that it does better work.—Photo by J. C. Allen & Son.

Soil and Crop Relations—It is now well known that the type of soil has an intimate relation to the yield and quality of the crop grown upon it. The mutual adaptations of soils and crops have been measurably understood and taken advantage of by the more intelligent farmers of the state for probably a hundred years. In consequence certain areas are designated "corn belt" soils, wheat lands, melon soils, and truck lands.

Mutual Crop Relations — More recently the relations of crops, one to another, are becoming better understood. Perhaps nowhere in nature is the need of change more pronounced than in the succession of field crops. The farmers learned early that the continuous growing of a single crop had an ill effect on both yield and quality of the product.

Change of Crop — This led at first to a hit or miss change of crops, including hoed crops, small grains, and grasses. With the advent of the legumes the change became more varied and finally, in the latter part of the nineteenth century, culminated in crop rotation, which means an orderly succession of crops (each differing from its predecessor) in a recurring series.

For a time rather wide rotations were advised and followed by a few farmers;[1, 2] but gradually the prevailing Indiana rotation has narrowed down to a three course rotation of (1) corn, (2) wheat, oats, or rye, (3) clover or other legumes. This rotation is really a compromise between economic and scientific considerations. Many farmers consider it a good practical rotation which, coupled with thorough tillage and high fertilization, fairly well maintains the improvement in crops which other means have effected.

Farm Management Studies — Within the past decade the Farm Management Department of the experiment station, in cooperation with leading farmers in several counties, has been conducting a series of investigations, including the mutual relations of soils, crops, and live stock. The outcome of this work will doubtless be the finding of rotations better suited to local conditions which will conserve soil fertility, increase production and widen the margin of profit. Marked progress

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[1] Mathews R. Hull of Fayette County endorsed an eight course rotation, inclduing three crops of wheat, two of clover, one each of corn and rye, and one year fallow. The order of cropping is not given. — Report of the State Board of Agriculture for 1852, p. 358.

[2] Oliver Albertson, Washington County, recommended the following eight-course rotations: First — 1 potatoes, 2 wheat, 3 corn, 4 oats, 5 clover, 6 hog pasture, 7 timothy, 8 cattle pasture. Second — 1 corn, 2 oats, 3 summer fallow, 4 wheat, 5 clover, 6 hog pasture, 7 & 8 as in the first. — Report of State Board of Agriculture for 1854-5, pp. 259-260.

has already been made in mixed husbandry farming through this cooperative work which is continuing.

In an ideal rotation each crop tends to hold in check the injurious insects and plant diseases that would multiply under succession cropping, and also promotes the soil conditions and activities favorable to the ensuing crop.

Tillage — The early cultural implements were few in number and crude in construction. In consequence the tillage operations of the first half of the nineteenth century were very imperfect. With the advent of improved harrows, cultivators, rollers, drills and planters in the third quarter of the last century and with the recent introduction of the cultipacker, rotary harrow, and soil pulverizer, the operations of planting, sowing and crop cultivation are more perfectly done. This is contributing much to crop improvement. Thorough, intelligent tillage of a properly conditioned soil, adapted in time and character to the needs of the soil and the growing crop, mellows and aerates the ground, destroys weeds, conserves moisture, kills many injurious insects, promotes desirable chemical and biological activity, secures freer range of plant roots, and thus gives the crop full possession of the soil. Quite

The ensilage harvester has just come into use in a very limited way in Indiana. Its practicability under the usual weather conditions in the state, has not yet been fully demonstrated.—Photo by J. C. Allen & Son.

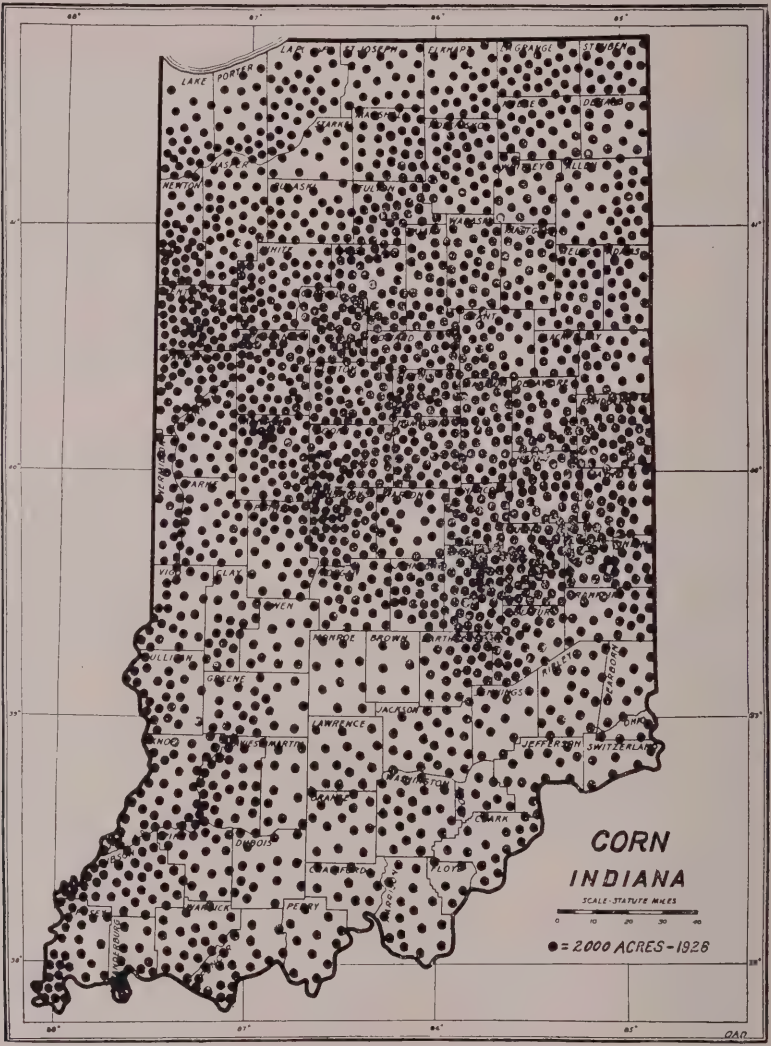
recently the "multiple hitch" by doubling, tripling, or even quadrupling the possible horse power per man, and the high-powered tractor have made possible the use of the larger cultural unit, thus increasing the economy, timeliness, and efficiency of the tillage operations.

Crop Fertilization—The disappointing early experiences of farmers in the use of commercial fertilizers led many to believe that they poisoned the soil or threw it out of balance. Thus a strong prejudice grew up against their use. This was due in part to inferior grades of fertilizers then on the market and in part to the imperfect knowledge of the farmers concerning their composition, availability, application, and use.

Fertilizer Control Law—The Indiana fertilizer-control law enacted in 1899 and amended in 1901 is one of the best in the United States. Under its provisions the farmers have been enabled to secure fertilizers true to guaranty, of increasingly high grade, and suited to the particular purpose in view. The widely-published results of hundreds of field tests of commercial fertilizers on the different soil types and with the several farm crops, conducted by the experiment stations, afford clear and specific information on the nature, application, and functions of these fertilizers.

Fertilizer Formulas—The Indiana and several other experiment stations have published fertilizer formulas for the different types of soil and for the various field, orchard, and garden crops. With the information thus afforded, intelligent farmers may now use commercial fertilizers, with legumes, and as a supplement to farm manures, with increasing economy and profit.

Results from Fertilizers—Highly profitable returns have been secured by the experiment station and by many Indiana farmers from the use of potash fertilizers on muck soils, and of phosphates on certain clay soils. In fact the gains have often been the difference between practically no crop and a good yield with a high percentage of marketable product. Other results from the use of commercial fertilizers include an earlier maturing of crop, a higher percentage and better quality of grain, a greater strength of stalk and straw, an increased yield and improved quality of fruit and vegetable products, a greater control of soil and plant activities, a stronger power to endure unfavorable weather conditions and withstand the attacks of plant diseases and injurious insects.



Map showing graphically the production and distribution of the corn crop of 1927, based on the state census of January 1, 1928.

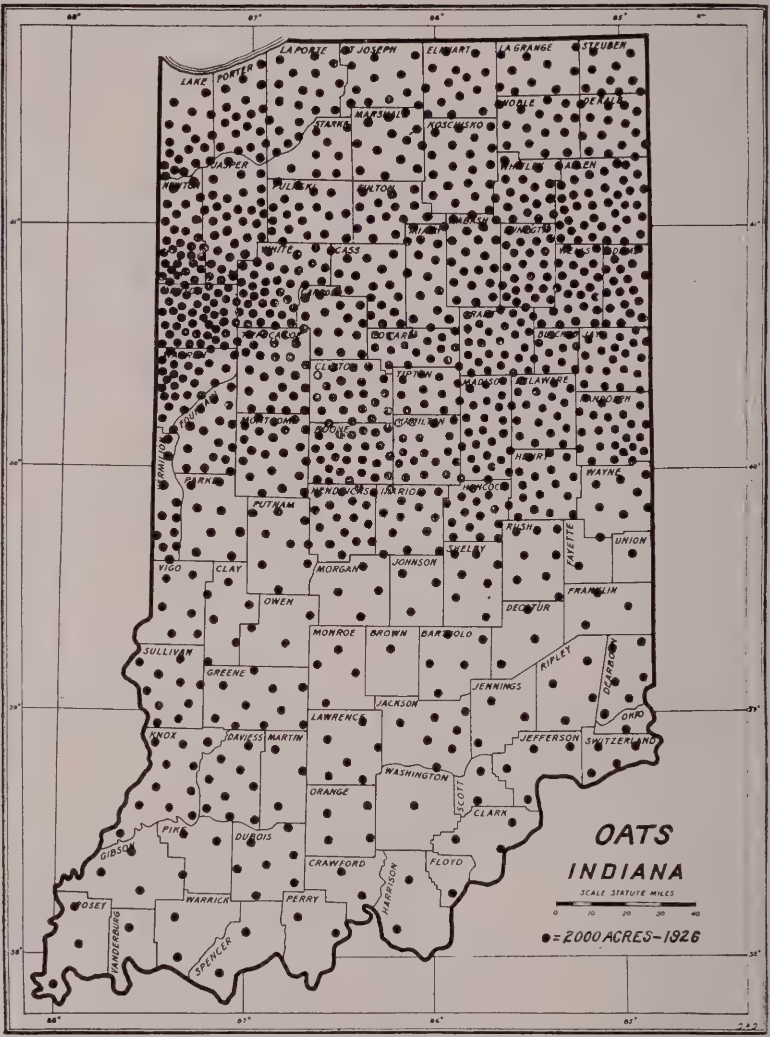
Thus commercial fertilizers, in the best modern farm practice, have proved to be an efficient and profitable means of crop improvement, and Indiana farmers of the present century have been using them in steadily growing numbers.

Protecting the Growing Crops — The various means of protecting the growing crops which Indiana farmers have successfully employed for a number of years include the isolation of the cornfields by other intervening crops to preserve purity of strain; the destruction of the native barberry to reduce the rusting of wheat and oats; the eradication of the wild garlic and wild onion, in fields where wheat is to be grown, to prevent contamination of the crop; the disinfection of both soil and seed to prevent the growth of smuts in the small grains; the late sowing of sound, heavy, plump seed wheat, in connection with crop rotation; thorough preparation of seed bed and heavy fertilization, to avoid the Hessian fly; the destruction of rodents that levy toll on growing and harvested crops; the terracing of cultivated hillsides to husband soil moisture and prevent injury to crop from erosion or slumping of the soil; the heading off and killing of highly destructive migratory insects, such as the army worm and chinch bug, to safeguard the growing cereal crops.

By faithfully following the instructions and advice of the experiment station, the farmers of Indiana have not only materially reduced crop losses, but they have also attained higher standards of crop production.

Time to Harvest — Timeliness in the harvesting of farm crops is important. In last century the smaller capacity of the farm implements often delayed the harvesting with loss in quantity and quality of product. Hay harvest was often delayed until the slow cultivation of the corn could be finished with the single row cultivator. Sometimes the mowing was purposely delayed until the hay crop was almost fully ripe, so that the hay would cure more quickly and have more "body". This was at the expense of both quality and digestibility. The delayed hay harvest from whatever cause sometimes retarded the harvesting of the small grains, involving frequent loss from "shattering" and fallen straw. Not infrequently wet weather delayed the stacking of the harvested crops, which incurred further losses from birds or from molding or sprouting of the grain.

Early Silage Immature — In the early years of the silo the corn was generally cut too early for ensiloing, in order to clear the field for the wheat seeding. Sour, unduly-laxative and less nutritious silage was the result.



This oats map shows the production and distribution of the oats crop of Indiana for the year 1925, based on the state census January 1, 1926.

Methods of Harvesting—The slower and less perfect work of the earlier harvesting implements and machinery was frequently responsible for loss or deterioration in harvested crops. Examples in point were the cradling and hand binding of small grains; the mowing scythe and hand curing of hay; the slow, tedious hand husking of corn which permitted many stalks to drop their ears to the ground to become wet, moldy or frozen; and the long exposure of the shocked corn to rodents and inclement weather. The far more rapid and, in most cases, better work of the self-binder, combine, corn picker, corn binder, and corn husker-shredder, now greatly reduce field exposure of harvested crops and thus largely prevent the losses in quantity and quality of products incident to the harvesting practices of last century.

The present more timely harvesting of the crops has played a not unimportant part in crop improvement for which the farmers are largely indebted to the agricultural chemists, the inventors and builders of improved harvesting machinery.

Curing of Crops—Since 1850 marked changes have been made in the curing of farm food crops. The early slow laborious drying of hay by hand forking of the partly dried swath and the later stirring and turning of the hay by the hay tedder and by horse rakes caused overdrying of part of the crop and a considerable loss of the blossoms and leaves.

Hay Making—Within the present century the passing of the freshly-cut grass through a long heated tube effects quick curing and avoids losses from rain, sun-drying, and turning of the partially dried crop. Hay curing by artificial heating is being developed at Purdue and elsewhere.

A still more recent method is the drying of the green crop in a round silo-shaped metal structure with both inside and outside ventilation of the hay which is deposited in the form of a hollow cylinder. Here again there is no loss of leaves or blossoms. Although yet in the experimental stage, this method seems likely to prove successful. It would avoid the barn risk of fire by spontaneous combustion or lightning. A metal one-story barn is a companion structure. See cuts of barn and hay storage elsewhere.

Storing Wheat—In the case of threshing the wheat immediately after harvest, any needed drying could be done by the means of the fanning mill or in the elevator.

Drying the Corn—The modern types of corn cribs with inside and outside ventilation, and the heated seed corn houses permit the earlier husking of the corn with reduced exposure of both man and crop to cold, inclement weather, as well as losses due to rodents and molding.

Making Silage—The modern round silo of dimensions adapted to size of feeding herd, with the slow filling, careful spreading, and immediate packing of the ensiloed product, make possible the preserving of the crop in appetising form without loss from molding or undue fermentation.

Apple Storage—The modern apple storage, with its double or triple walls, its provision for air and ice cooling, and the improved methods of packing the fruit, preserves the commercial apple crop in good condition at moderate cost, for the late fall and higher-priced winter market.

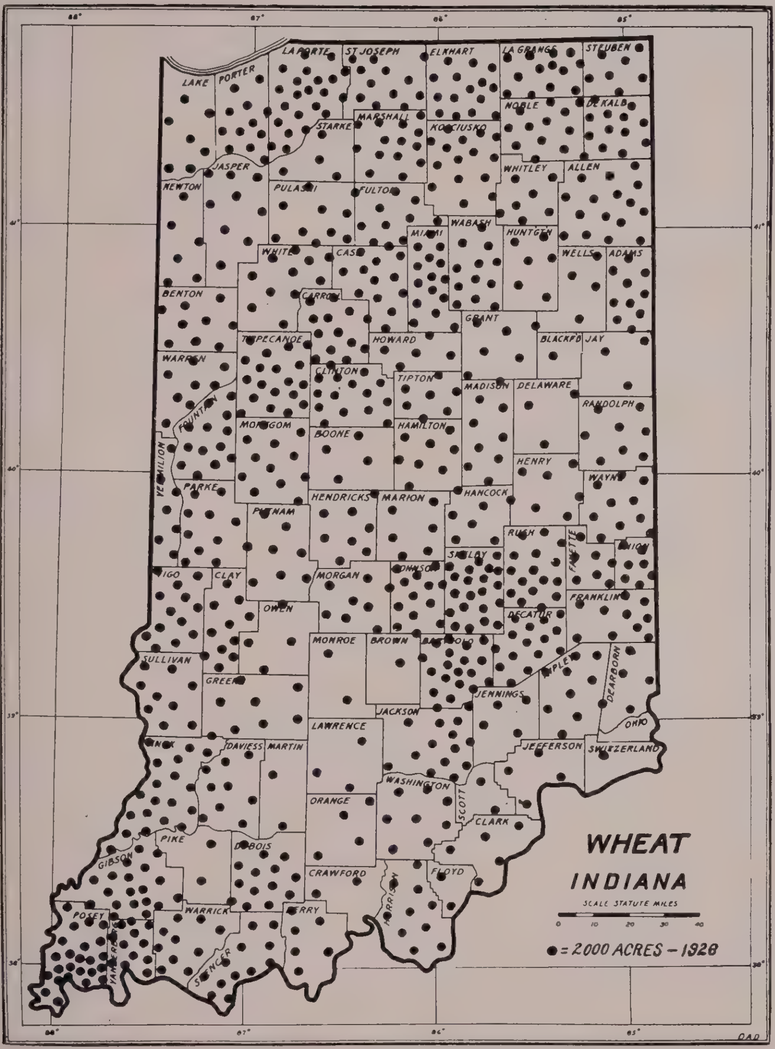
Saving Effected—Taken together, the several changes in the methods of harvesting, storing, and curing the food crops of the field and orchard in the last half century, mark an epochal improvement in farm practice. The reduced losses and the greater conservation of quality of product thus effected show a degree of advancement probably not surpassed in any other phase of farm operation.

Seed Selection—Seed selection was doubtless the earliest means of effecting crop improvement employed by the farmers of Indiana. Very early and probably for fully a hundred years the best-looking ears of corn were selected at husking time and hung up by their own husks in an airy place to dry before freezing weather set in. Very early, too, the tip kernels of corn must have been discarded because of their small size. Much later, probably about 1850 or 1860, with the advent of mechanical droppers, the large, irregular, butt kernels were also discarded in order to secure a more uniform stand of corn.

Field Selection of Seeds—Field selection of seed, especially seed corn, is being practiced in recent years by the progressive farmers of the state. This not only insures greater purity of seed, but it also makes possible the securing of other desired characteristics, such as time of maturing, uniformity of type, vigor and strength of growth, disease resistance, prolificacy of plant, and quality and soundness of product.

Corn Improvement—A new impetus was given to corn improvement in Indiana at the opening of the present century by the organization of the State Corn Growers' Association.

By its championship of the interests of Indiana corn growers; its advocacy of the best methods of corn production; its development of the Indiana standard of perfection; and by its encouragement through public recognition and awards, it has induced Indiana corn growers to produce and exhibit high class corn at state, regional, national, and international fairs



This map shows the production and distribution of the wheat crop of Indiana for the year 1927, based on the State Census, January 1, 1928.

and expositions. The Indiana Corn Growers' Association has thus accomplished a truly great work in promoting throughout Indiana higher standards and ideals in corn production, and it has also stimulated an interest in corn improvement wherever this crop is grown. Through its standing committees and public discussions, the Indiana Corn Growers' Association has also done much to effect improvement in soils, small grains, and legumes.

Screening the Wheat — The appearance of the hand-driven fanning mill early in the second quarter[1] of last century made possible the screening and partial grading of seed wheat. Owing partly to defects in the earlier machines and partly to the indifference or carelessness of many farmers, the screening and grading were often very imperfectly done. In consequence, rye, chess (quite appropriately called cheat), and cockle were present in many wheat fields as late as the close of last century. Nevertheless, for perhaps seventy-five years tidy farmers have removed these impurities from their wheat fields before harvest.

Certification of Farm Seeds — Since 1920, both of the above-named methods of ridding seed wheat of impurities have been carefully used by the Seed Certification Committee of the Indiana Corn Growers' Association. This committee, headed by a member of the experiment station staff, certifies approved varieties of wheat, rye, oats, barley, soybeans, cow peas, and corn that meet certain specified standards of purity and soundness. To illustrate briefly, the wheat field is carefully inspected before harvest by a member of the certification committee. After the crop is harvested and threshed a carefully cleaned and truly representative sample of the grain is also examined by the committee. If both examinations show that the several requirements as to purity, soundness, and freedom from weed seeds are met, the wheat is certified as suitable for sowing.

As a further precaution to avoid the mixing of varieties of seed wheat, the certification committee urges the growing of a single variety in the neighborhood, or at least by all the farmers in a "threshing ring". Progressive farmers, in rapidly increasing numbers, are now growing certified seed crops under the direction of the seed certification committee.

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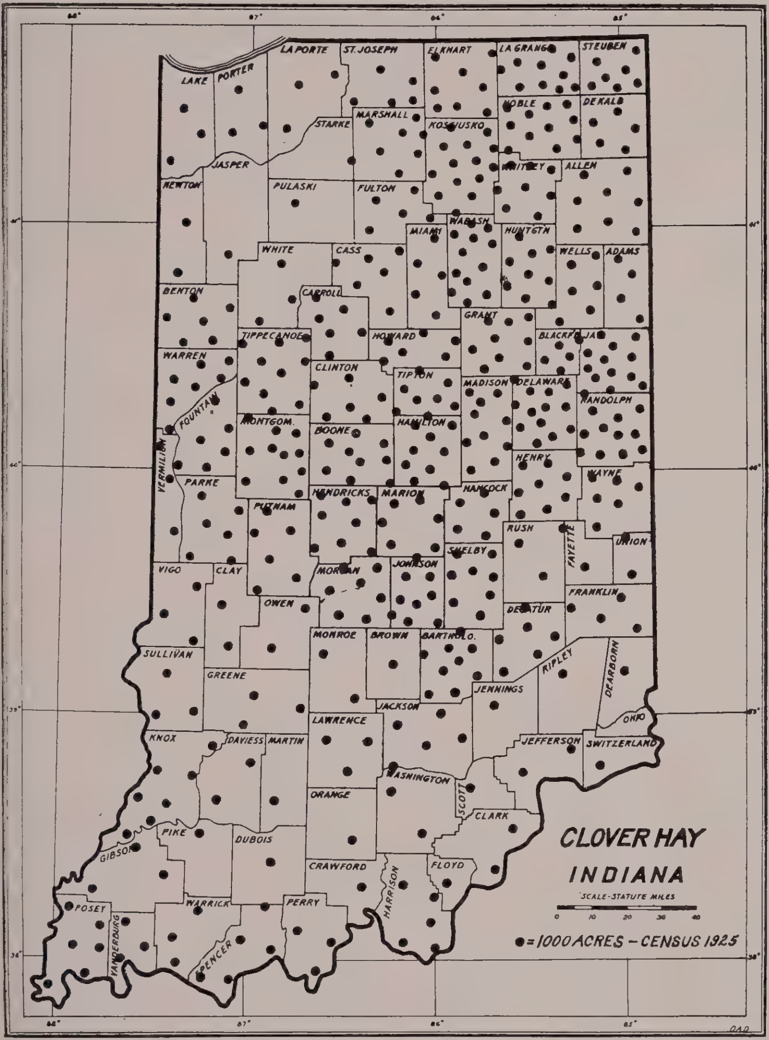
[1] Grafton B. Whitaker of Gosport purchased a fanning mill in Indianapolis, October 22, 1834, according to private correspondence in the possession of Mrs. J. H. Brooks of Greenfield.



This map shows the production and distribution of the clover hay crop of 1924, according to the state census January 1, 1925.

Indiana Seed Law—The state seed law of 1921 requires that each package of one pound or more of seeds sold for planting in Indiana must have attached thereto the tag or label of the State Seed Commissioner. This label must carry the guarantee of the dealer, showing the kind of seed, minimum percentages of purity and germination, and the maximum number of each kind of noxious weed seeds per pound. This law protects the buyer from unknowingly purchasing seeds not true to name, of low vitality, or badly adulterated with seeds of noxious weeds. Although these legal safeguards do not insure crop improvement, they do help to prevent crop deterioration from the introduction of weed pests and low-grade agricultural seeds. As a further safeguard, the Purdue Experiment Station, in cooperation with the U. S. Department of Agriculture, conducts a seed-testing laboratory in which the correctness of the dealer's guaranty may be determined.

Seed Tests—For perhaps a hundred years careful Indiana farmers, when in doubt as to the vitality of their seed corn, have germinated small samples of it. The percentage of germination governs the thickness of planting. But within the present century the general tendency to grow larger, and hence later, varieties of corn in order to win prizes based on yield, as well as the frequency of early killing frosts, has made seed corn testing a common and prime necessity.

Seed Corn Testers—To meet the situation, seed corn testers of several types and capacities have been devised, culminating in the community tester, which will test sample kernels of from 2,000 to 4,000 ears at a time.

Rag Doll Tester—A modified form of the "rag doll" tester devised by the Botanical Department of the experiment station in 1920 isolates the germinating samples and thus prevents the spread of disease from infected to sound seed. This makes it possible to select only those ears which are sound and show a high percentage of germination.

Seed Disinfection—Coupled with soil renovation, through drainage, cultivation, liming, fertilization, and crop rotation is the more recent practice of seed disinfection in crop improvement work. Without seed disinfection a renovated soil would soon become reinoculated with harmful germs adhering, in the form of microscopic spores, to untreated seeds.

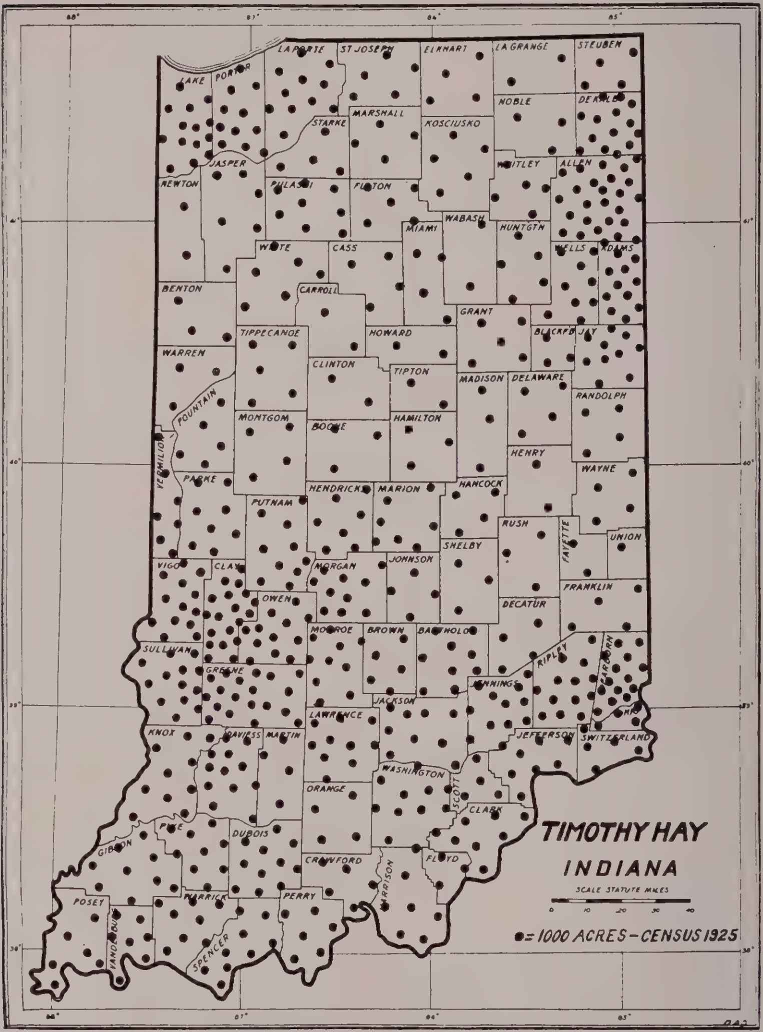
Seed Disinfectants—Two types of seed disinfectants in common use by the better farmers of the state are hot water for the loose smut of wheat, and formaldehyde for the bunt or stinking smut of wheat, the smuts of oats, and the "scab", "black leg", and "black scurf" of potatoes. Seeds thus carefully treated, when planted in clean soil, produce crops free from the diseases named.

Community Seed Treatment—Since the development of the community seed tester in 1921, the farmers, grain dealers, and public schools in many of the counties of Indiana have been cooperating with the county agricultural agents and the experiment station in the treatment of seed wheat and oats in order to destroy the smuts that attack these crops. In this work, as well as in the testing of seed corn, cooperation has often been community-wide. These large cooperative movements have prevented serious losses from plant diseases, improved the quality and materially increased the production of crops, and they mark a big step forward in the attitude and practice of many thousands of Indiana farmers.

Plant Breeding—The most effective means of improving the inherent characteristics of farm crops is plant breeding. In this work the experiment station has led the way in Indiana with the ready cooperation of many leading farmers of the state. The principal lines of plant breeding now being conducted in Indiana began with corn in 1902, with wheat in 1904, with tomatoes in 1918, with soybeans in 1926, and with clover and oats in 1927.

Goals Sought—The common aims of this plant breeding work have been to secure greater uniformity of type, increased vigor of growth, stronger disease resistance, larger yield, improved quality, and, in the case of wheat, greater winter hardiness.

Corn Breeding—In 1902, several wide-awake Indiana farmers, in cooperation with the experiment station, began the ear-to-row planting of corn, with detasseling of the stalks chosen to be mothers, to insure cross-fertilization. In 1918, the Botanical Department of the experiment station, in cooperation with the U. S. Department of Agriculture, inaugurated an elaborate series of corn-breeding investigations, first by crossbreeding selected types to get prolific disease-resistant strains, then by inbreeding to fix characters, followed by crossbreeding of approved related strains to insure vigor. In 1924, several of these crossbred, inbred, disease-resistant and "fixed" types of corn were distributed for further trial on farms in different sections of the state. If the desirable characteristics of these new strains of corn prove persistent in the hands of goods farmers, great improvement in the corn crop



This map shows the production and distribution of the timothy hay crop of 1924, based on the State Census, January 1, 1925. A comparison of the clover and timothy hay crops of Indiana in 1924 reveals the fact that each was grown most extensively where the other was least grown.

may be expected. The results already attained in this corn-breeding work indicate its possibilities and encourage the hope that vigorous, prolific, and strongly disease-resistant types of corn, well adapted to the several corn-growing sections of the state, may soon be developed.

Wheat Breeding — Wheat-breeding experiments have been carried on continuously by the Soils and Crops Department of the experiment station for more than a score of years. Two notable results of this work are the Michikof and Purkof hybrid wheats, the Michikof being first distributed to the farmers of the state in 1920 and the Purkof in 1924. These wheats are two strains from a cross of Malakof (a Russian variety) and Michigan Amber, the former being the male parent. The Michikof is a hardy, prolific, hard red wheat, of uniform, excellent milling qualities, the flour being well suited to the needs of bread bakers. This wheat is well adapted to the dark soils of central and northern Indiana. The Purkof is a high-yielding, hardy, red wheat well suited to the thin soils of the southeastern part of the state. However, the Purkof, unlike its near relative, varies in degree of hardness, this quality increasing, apparently, with the luxuriance of growth and the supply of available nitrogen.

Since 1920 and 1924 respectively, the Michikof and Purkof wheats have been grown in marketable quantity. They are popular with many farmers because of their winter hardiness and high yield, and the former, at least, is steadily gaining in favor with the millers, who find that they can manufacture flour from Indiana wheat well adapted for bread making purposes.

Bread from Indiana Flour — Before the Michikof wheat entered the market, hard winter wheat from Kansas, or hard spring-wheat flour from the northwest was shipped into Indiana to satisfy the demand for hard-wheat flour. In consequence, the soft Indiana wheats had to be shipped out of the state to find a market elsewhere. Now the use by bakers of the equally satisfactory flour from the home-grown, hard Michikof wheat is effecting a double saving in freight which benefits both producer and consumer.

Tomato Breeding — In 1918 the experiment station, with the cooperation of the Indiana Canners' Association, began the improvement of the tomato by means of plant breeding and investigation of the causes of disease and variations in the quality of the fruit. The Baltimore, a popular canning tomato, was selected for improvement. The breeding has been carried on by the experiment station, and the canners' association has multiplied the seed and distributed it to the growers, while specialists have been making the laboratory investigations. These studies and experiments, which are still in progress, have already developed a superior tomato for canning or for the general market called "Indiana Greater Baltimore", and have placed Indiana in the forefront of tomato-growing states.

Sweet Corn Improvement—Since 1918, the Indiana Canners' Association has also been cooperating with the experiment station in improving the standard varieties of sweet corn through breeding and selection. In this work substantial progress has been made in eliminating undesirable characteristics, in establishing purity of strain and uniformity of type, and in improving the yield and quality of the product.

Corn Borer Evasion or Resistance—With the advent of the European corn borer in Massachusetts (identified in 1917)[1] and its later invasion of northeastern Indiana, a new problem in corn growing arose. In addition to the various combative measures—including clean-up and special farm implements—for controlling this destructive pest that have been employed, entomologists and agronomists have been attempting, with some measure of success, to develop a corn-borer-resistant type of corn. But greater success has attended the selection of early maturing varieties of corn which, in central Indiana, will mature when planted after the corn borer has about completed its seasonal activities.

Crop Improvement Cooperators—From the foregoing paragraphs it appears that the field experimenters, chemists, entomologists, plant pathologists, and plant breeders of the experiment station have been actively cooperating with the farmers of Indiana in effecting crop improvement and in discovering and maintaining the conditions for continuous maximum production of high-quality crops adapted to the several uses for which they are grown.

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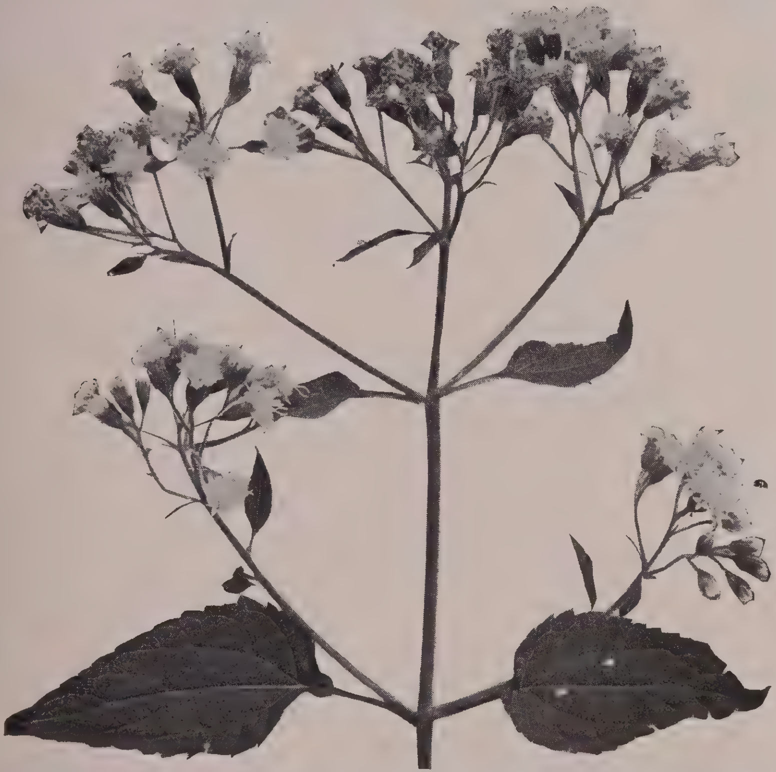
[1] U. S. Department of Agriculture, Department Bulletin No. 1476.

Results of Crop Improvement—The more important results of the crop improvement work, that began about fifty years ago and is now being carried forward with increasing care and success, include the introduction of new and improved varieties or strains of wheat, corn, oats, rye, barley, alfalfa, clover, soybeans, and cow peas; better soil conditions for crop growth; rotation of crops; improvement in the vigor, hardiness, adaptability, quality, and yield of crops; greater control of insect pests and plant diseases; and wider and more effective cooperation of farmers, experimenters, the U. S. Department of Agriculture, investigators, county agricultural agents, schools, boys' and girls' clubs, railroads, and many agricultural, manufacturing, and commercial organizations in securing larger and better crop production.



This is a picture of a noxious plant known as white Snake Root, *Eupatorium urticaefolium,* which is found in open woods pastures. When the grass is closely grazed, livestock will sometimes eat the white snake root with fatal results. The toxic effect is transmitted through milk, and thus endangers human life. The plant is easily identified and should be eradicated from all pastures in which livestock are kept.

CHAPTER XI.

INTRODUCTION AND IMPROVEMENT OF PURE-BRED LIVESTOCK

MONGREL LIVESTOCK—The term "mongrel" doubtless fitly describes the livestock of the early settlers in Indiana. It must be remembered that most of the first settlers, who came from the Carolinas, Virginia, and Kentucky, were very poor and that their livestock had to share the scanty subsistence of their owners. It was thus inevitable that even the better grades of livestock, if there were any, would speedily deteriorate under the inhospitable conditions of the frontier.

There doubtless was an infusion of Thoroughbred blood in the early horse stock. It is equally certain that there was blood (doubtless very dilute) of good English and Dutch stock in the veins of the cattle. The hogs, which were poor enough at the start, quickly reverted to a semi-wild state and were noted more for fierceness and ability to travel than for early meat-producing qualities.

No Early Distinct Breeds—One thing appears to be certain, namely, that there were no distinct breeds of domestic animals (with one or two possible exceptions) in Indiana in the first quarter of last century. Since in practically all cases documentary evidence has not been available and since all the early pioneers have gone, we have had to depend for early information on uncertain tradition and the rather hazy memories of the few older men and women of the later pioneer period who are still living.

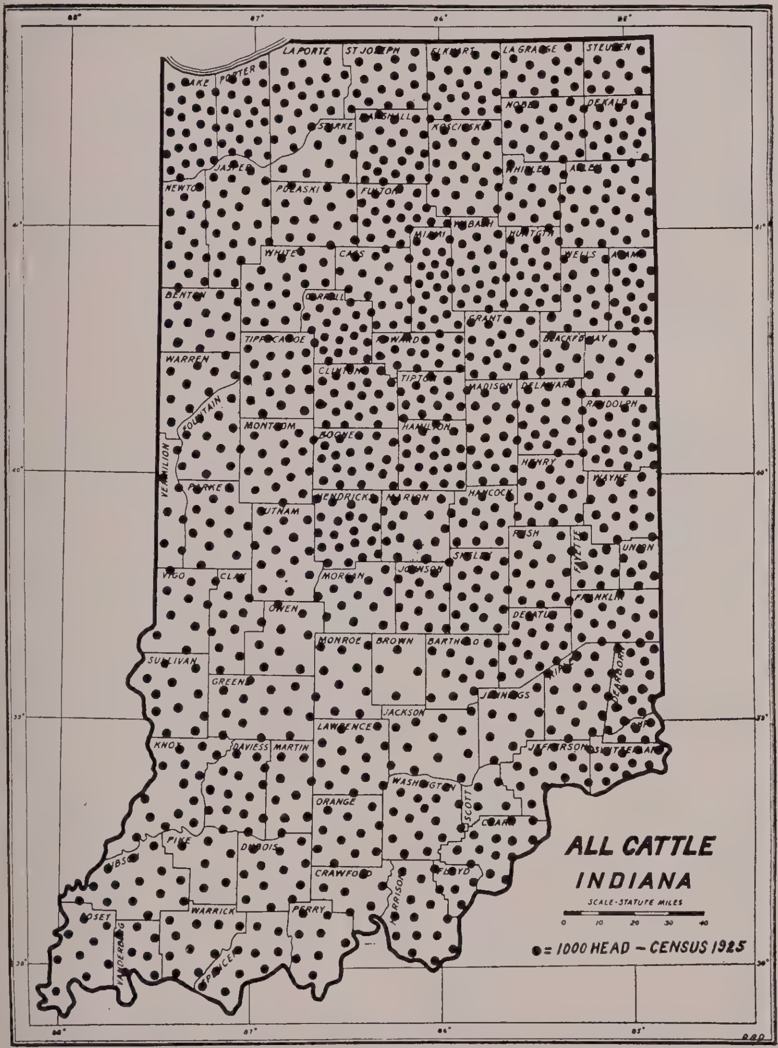
The 1908 report of the State Bureau of Statistics gives the breeds of domestic animals found in the several counties at that time. This report shows the wide distribution of the more important breeds of livestock, but does not give the dates of their introduction.

PURE BREEDS OF LIVESTOCK INTRODUCED

With the help of the County Agents and the assistance of public-spirited older men and women of the farm, an attempt is made, in the following pages, to give the approximate time and order of introduction into Indiana of the more important breeds of livestock.

CATTLE

Shorthorn—Cattle, variously known as "Patton Stock", Durham, and, later, as Shorthorn, were brought into Indiana early in last century. Reference to these early importations was made in Chapter VII. From about 1830 the spread of this breed has been gradual but constant. It was in fully one-half



This map shows the production and distribution of all cattle in Indiana in 1924, based on the State Census, January 1, 1925.

of the counties by 1860 and was reported in every county by 1886. Wherever this breed has gained a foothold it has remained as a permanent asset.

Jersey — The next breed to come into prominence in Indiana was the Jersey. Its introduction began about 1850, but according to reports not more than thirteen counties were represented by this breed prior to 1870. Since then its spread has been rapid, as it was reported in over fifty of the counties by 1890. Since 1890 the Jerseys have spread into all the remaining counties of the state. This rapid expansion of the Jersey breed since 1870 is doubtless due to the great development of the farm dairy and creamery industry in Indiana in the past fifty years.

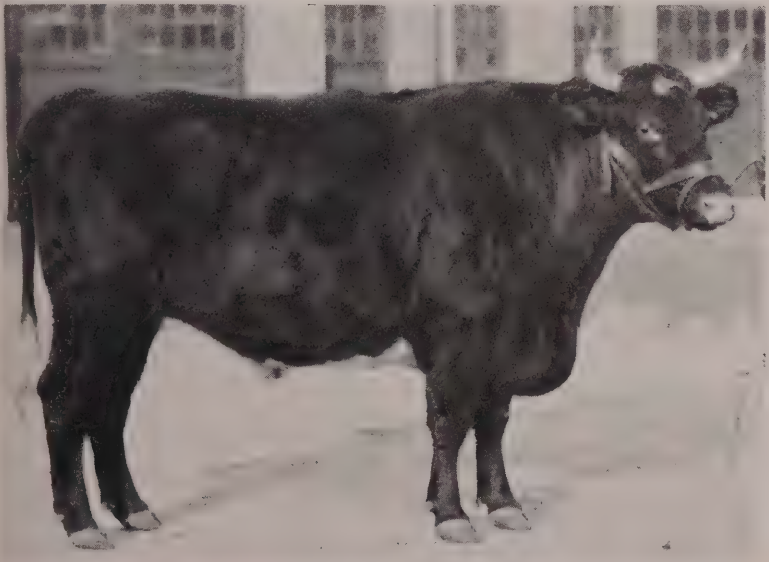
Ayrshire — The Ayrshire made its appearance in Indiana about the same time as the Jersey. It is an open question which came first. Unlike the Jersey, this attractive, sprightly, Scotch dairy breed is not widely distributed in Indiana. In fact, it has lost ground in some sections of the state since its early introduction, as the state livestock census reported it in only four counties in 1908. Recently, however, this breed is again coming into favor as it has been introduced into twenty-six counties since 1908. Its distribution is chiefly in northern and central Indiana.

Devon — The introduction of Devon cattle into Indiana is practically within the three decades beginning with 1850. This breed has been represented in forty-one counties. These small, shapely, all-red cattle produced good milk cows and fine, quick-moving work oxen. Being too small to suit the beef men, the breed has waned in the state. It probably has disappeared as a distinct breed in Indiana, as it was not listed in the 1908 state livestock census.

Hereford — Hereford cattle began to appear in numbers in Indiana in the seventies and their introduction was very rapid in the next two decades. By 1910 the breed was reported in all but five counties. This breed is quite evenly distributed over the state. Its compact form, its early maturity, and its good grazing and feeding qualities have made the Hereford breed popular with many breeders as well as growers of butcher's stock.

Holstein-Friesian — The introduction of Holstein-Friesian cattle into Indiana, with a single reported exception, dates from about 1875. Since then this dairy breed has spread rapidly, being represented in all but thirteen counties by 1910. Since then the breed has appeared in four additional counties. This probably does not credit the full diffusion of Holstein-Friesian blood in the state as it doubtless exists in grade stock in all counties engaged in commercial milk production.

Aberdeen Angus — Very few Aberdeen Angus cattle (called also simply Angus or "Doddies") were in Indiana prior to 1880 but their spread in the state was quite uniform in the three decades following 1880. By 1910 the breed had made its advent into eighty-four counties. The rapid expansion of this breed in three decades is doubtless due to its inherent good beef-making qualities and its uniform appearance, being solid black in color and hornless.



Shorthorn steer supposed to represent the approved beef type of about 1875.

Galloway — The Galloway, which is much like the Angus though longer-haired and rough-coated, made its first appearance in Indiana about 1870. Its limited spread was confined to the three decades following 1880. This breed appeared in thirty-three counties located chiefly in central and northern

Indiana. Its stay was brief in many cases, as the state livestock census of 1908 credits it with then being in only sixteen counties.

Guernsey — The introduction of Guernseys into Indiana began in the eighties of last century. In 1908 this dairy breed was represented in fifteen counties according to the state livestock census of that year. Since then, the Guernseys have spread rapidly, having representation, by 1925, in all but sixteen counties. The breed is quite evenly distributed over the state.

Shorthorn bullock representing an approved beef type at the close of the first quarter of the 20th century.

Polled Durham — Although a very few Polled Durham (later called Polled Shorthorn) cattle were reported in the state in the seventies, their introduction into Indiana is practically confined to the three decades ending in 1910. In 1908 this breed was represented in seventy-five counties and by 1928 in all but eleven counties. These polled cattle, which are really hornless Shorthorns, came into prominence, according to Plumb, at the World's Fair in Chicago in 1893.[1] The rapid spread of this breed in Indiana is undoubtedly due to the general preference for hornless cattle possessing, in other respects, Shorthorn characteristics.

Red Polled — The introduction of Red Polled cattle into the state was chiefly in the two decades ending in 1910. By 1928 this breed of dual-purpose cattle had spread into fifty-eight counties located principally in central and northern Indiana, though it was also found in several southern counties. These cattle are good milkers and perhaps equal to the early Shorthorns in beef-making qualities.

Polled Jersey — The Polled Jersey is a hornless strain of Jersey cattle.[2] Polled Jersey cattle were reported in Fayette county in 1899 and in nineteen other counties in the first decade of the present century. These cattle are not listed in the 1908 report of the State Bureau of Statistics, and Professor Plumb devotes only a single paragraph to them in his revised edition of "Types and Breeds of Farm Animals". These cattle are found chiefly in the central third of the state. There is a sprinkling of them, however, in both northern and southern Indiana.

Other Cattle — Alderney cattle were introduced into four counties in approximately the following years: Marion, 1866; Elkhart, 1870; Floyd, 1875; and Delaware, 1914. This dairy breed, like the Jersey and Guernsey, has come from the Channel Islands in the south part of the English Channel. As the Alderney is not listed in the 1908 state livestock census, doubtless it has become extinct as a pure breed in Indiana. The introduction of Brown Swiss cattle into Indiana is practically confined to the present century. By 1924 this dual-purpose breed had spread into twenty-three counties in central and northern Indiana. Dutch Belted cattle were reported in four counties as follows: Randolph, 1888; Boone, 1908; Huntington, 1920; Blackford, without date.

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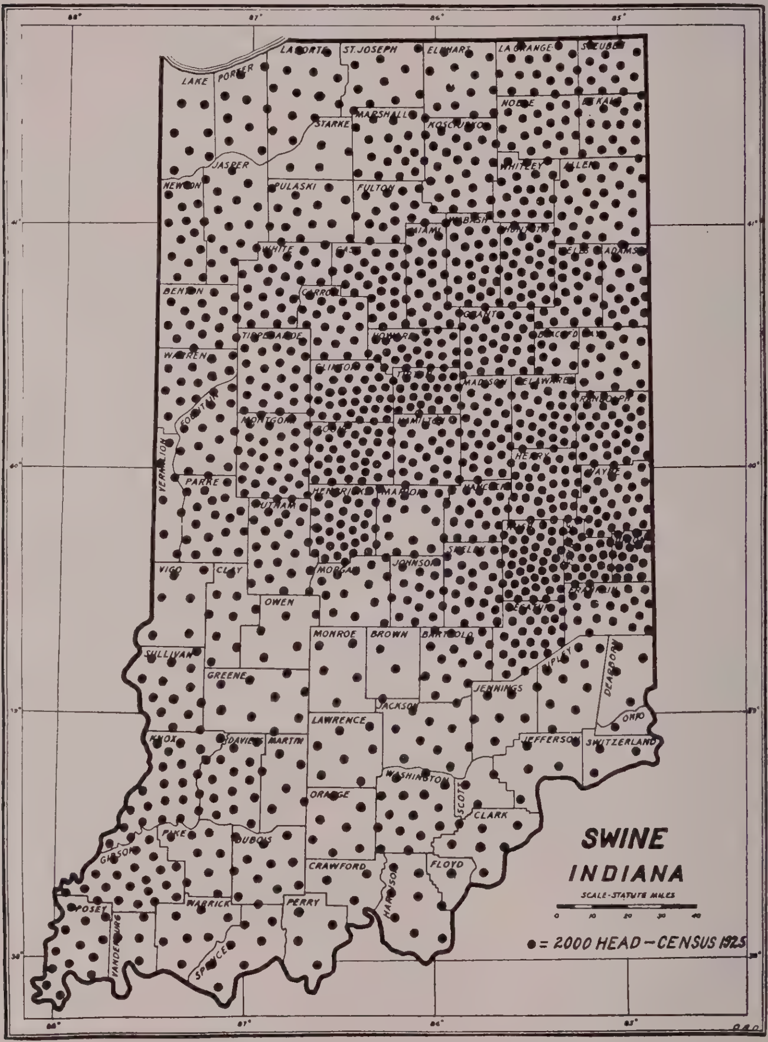
[1] Plumb, "Types and Breeds of Farm Animals," First Ed., p. 199.
[2] Plumb, "Types and Breeds of Farm Animals," Rev. 7d., p. 353.

Hogs

Early Breeds—Byfield, Irish Grazier, Warren County (O.), Suffolk, and Woburn hogs were reported in Indiana prior to 1850. These breeds, except the Suffolk, have long since disappeared as such. But the first three named are be-



This map shows graphically the heavy production and wide distribution of swine in the State in 1924 as based on the Census, January 1, 1925. By comparing the corn and swine maps it appears that the production of swine was heaviest where corn was most extensively grown.

lieved to have had a share in forming the Poland-China breed.[1]

Berkshire—Berkshire swine appeared in Indiana in the fifties of last century. Their introduction was gradual till 1870, very rapid in the next decade, and more gradual afterward. By 1908 the breed was represented in all but two counties, Perry and Vanderburg.

Poland China—Poland-China swine probably appeared in Indiana in the forties of last century. Their introduction was very rapid in the two decades ending in 1880 and by 1919 this breed had appeared in every county.

Chester White—The Chester White came into Indiana about 1850. Its introduction was most rapid in the two decades ending in 1880. This breed is or has been in every county except Crawford.

Duroc Jersey—The Duroc Jersey, often called simply Duroc, appeared in the state early in the sixties. Its spread was very rapid in the last two decades of the nineteenth century. This breed has been reported in every county in the state.

Essex—This small English breed appeared in Indiana in 1850. The Essex has been represented in thirty-seven counties. Owing, doubtless, to its small size, this breed has not obtained a strong foothold in the state. The 1908 livestock census found the Essex in only nine counties. It has been introduced in only one county—Owen—since 1908.

Hampshire—The Hampshire—formerly called Thin-rind—first appeared in Indiana in 1870. It spread slowly until 1900, but very rapidly in the first two decades of the present century. The Hampshire has been reported in all but fourteen counties, and is quite evenly distributed over the state.

Yorkshire—It is assumed that the county agricultural agents and others who report Yorkshires mean the large breed, although the large Yorkshire has been definitely reported in only three counties—Montgomery, Noble, and Tippecanoe. Yorkshires appeared in Indiana in the seventies, but their distribution was most active in the first decade of the present century. They have been reported in forty-three counties located chiefly in central and northern Indiana.

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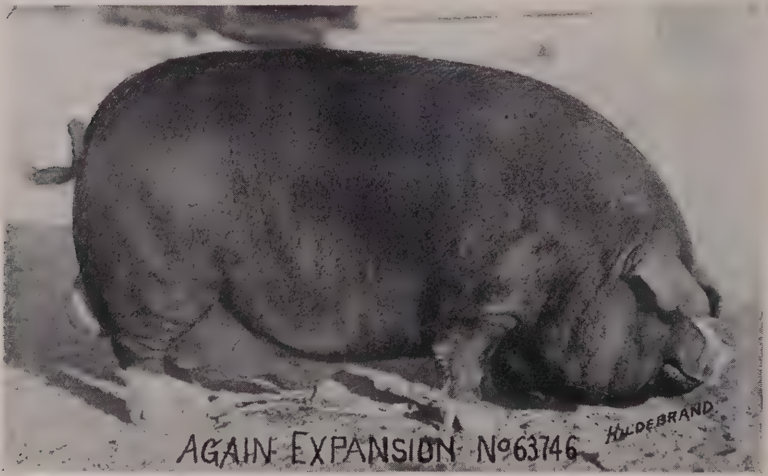
[1] Plumb, "Types and Breeds of Farm Animals," First Ed., pp. 484-486.

Spotted Poland-China—This breed sometimes called simply Spotted Poland, is regarded by Plumb as a type of the Poland-China.[1] With but five reported exceptions, the introduction of this breed is confined to the present century. In a quarter century the Spotted Poland-China has made its advent into sixty-three counties. Its distribution is more general in the north half of the state.

Other Breeds of Swine—The Victoria is a Lake county breed, developed about 1870 from crosses of Poland-China, Berkshire, Chester White, and Suffolk breeds.[2] The Victoria has been reported in only four counties. It is not mentioned in Professor Plumb's 1920 edition of "Types and Breeds of Farm Animals", and probably has ceased to exist as a distinct breed in Indiana. The Mule-foot breed appeared in the state about the close of the Civil War. Its spread was slow until 1900 but rapid in the first decade of the present century. This was due, doubtless, to the claim that it was cholera-proof. This claim proved unfounded and, hence, the Mule-foot hog has largely disappeared from Indiana. The Suffolk hog was reported in LaGrange county in 1870; in Randolph county in 1880; and in Benton, Delaware, Huntington, Jefferson, and Miami counties in 1908.



Poland-China boar, "Again Expansion," representing the over-refined "Cob-roller" type of swine that had its greatest development in the first decade of the present century.

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[1] "Types and Breeds of Farm Animals," Rev. Ed., p. 736.

[2] Plumb, "Types and Breeds of Farm Animals," First Ed., p. 518.

Industry Large—The extent of the swine industry in Indiana is indicated (1) by the fact that, of the four breeds now most prominent, the Duroc Jersey and Poland-China have been reported in every county, the Chester White in every county but one, and the Berkshire in all but two counties; and (2) by the prospect that in a few decades the Hampshire and Spotted Poland-China will attain like popularity.

HORSES

A class for Thoroughbred horses appeared first in the premium list of the State Fair of 1853. It then disappeared until 1866 when it reappeared and continued until 1880 when it was dropped, doubtless because of the small number of entries.

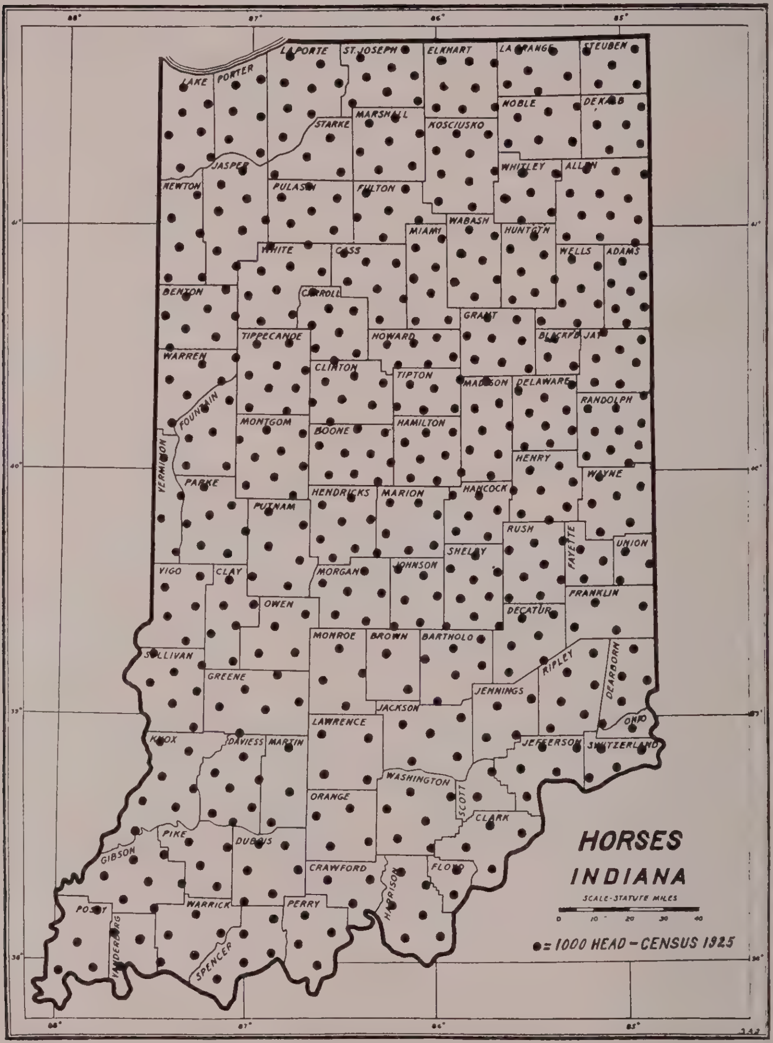
Classes for other breeds of horses first appeared in the State Fair premium list of 1883. There was a separate class for Morgan horses in 1893 only. The class for "Standard bred" horses appeared first in 1903, but there were classes for "trotters and pacers" beginning in the 1854 State Fair premium list. Between 1883 and 1900 the other breeds mentioned in the succeeding paragraph were represented quite regularly at the State Fairs.

Morgan—The introduction of the Morgan horse into Indiana began in the forties of last century. Its spread was more rapid in the two decades ending in 1870, by which time it had made its appearance in seventy counties. The breed later appeared in twelve additional counties. The introduction of this active and useful breed had about ceased by 1880. The coming of heavier farm implements and machinery and the advent of the heavy draft breeds must have been chiefly responsible for the displacement of the Morgan horse, which is still held in high esteem by the older farmers who knew him.

Thoroughbred—The Thoroughbred horse, according to reports received, has been represented in fifty counties. It later practically disappeared as a distinct breed as it is not listed in the 1908 state livestock census. Thoroughbred blood, however, must be widely diffused in the trotting stock of the state.

American Trotter and Pacer—The American trotter and pacer is or has been in every county of the state. Although of

Thoroughbred ancestry, this class of horses has been developed under varied conditions, lacks breed type, and hence some authorities do not recognize it as a distinct breed.[1] Reports received show that, with a single exception, (Posey County), this breed made first appearance in Indiana in 1850. Its spread was most rapid in the decade ending in 1870.



This map shows graphically the production and distribution of horses in Indiana in 1924 based on the State Census, January 1, 1925.

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[1] Plumb, "Types and Breeds of Farm Animals," Rev. Ed., pp. 46, 47.

Percheron — The introduction of Percheron horses into Indiana was practically within the second half of last century. Its most rapid spread was in the decade ending in 1880. This popular breed, like the American trotter, has been reported in every county of the state. The earlier importations were often called Norman.

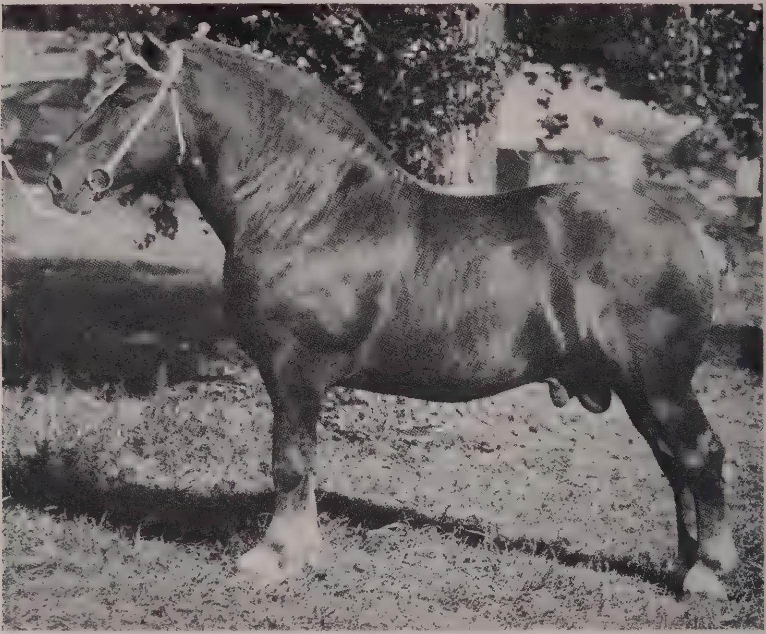
English Shire — The English Shire came into Indiana about the close of the Civil War. Its distribution, however, was mainly in the three decades ending in 1910. The Shire has been reported in sixty-nine counties. It had disappeared from twenty-eight of these counties in 1908 as the state livestock census of that year reported it in only forty-one counties.

Clydesdale — The Clydesdale appeared in Indiana in 1870. The period of introduction of this breed was almost wholly within the two decades ending in 1890. The Clydesdale has been reported in seventy-nine counties. The disappearance of the Clydesdale was even more marked than that of the English Shire as the former was found in only twenty-nine counties in 1908 when the state livestock census was taken.

Belgian — The Belgian horse, with a single reported exception, made its first appearance in the state in 1875. The spread of this breed has been almost wholly within the four decades ending in 1910. Its most rapid distribution was in the first decade of the present century. This breed appears to have held its ground in every county into which it came, as its spread into fifty-four counties prior to 1908 was increased to sixty-six counties by the state livestock census of that year. The total representation in 1923 was seventy-eight counties. The recent advance of this breed, despite the depression in the horse industry, suggests that it may soon be found in most if not all of the remaining fourteen counties.

French Draft — Very few horses called French Draft were reported in Indiana prior to 1880. The spread of this breed was mainly confined to the eighties and to the two decades ending in 1910. This breed has been reported in sixty-six counties. It is more widely distributed in the north half of the state.

German Coach — The German Coach horse appeared in Indiana in the eighties. Its distribution was mainly in the two decades ending in 1900. This breed also has undergone some shrinkage in the state as it was reported in sixty counties prior to 1908, but was found in only fifty counties in that year, according to the state livestock census. The German Coach is or has been represented in seventy-three counties of Indiana.



Belgian Stallion representing the type of this breed when first introduced into America.

Cleveland Bay—The introduction of the Cleveland Bay, an English horse,[1] began in 1850. It was represented in fifty counties prior to 1908 but disappeared later as it is not listed in the 1908 census of the State Bureau of Statistics.

French Coach—The French Coach horse appeared in the state in the eighties and its distribution was almost wholly within the three decades ending in 1910. This breed was represented in twenty-one counties prior to 1908 at which time the state livestock census found it in only thirteen counties. The French Coach horse has been reported in thirty-one counties.

American Coach—In the closing decade of last century horses called American Coach were reported in thirteen counties, located almost wholly in the central third of the state. They soon disappeared as they are not listed in the 1908 report of the State Bureau of Statistics and Professor Plumb does not include them in his "Types and Breeds of Farm Animals."

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[1] Bailey's "Cyclopedia of American Agriculture," Vol. III, p. 453.

The shrinkage in the representation of horses of the coach type early in the present century is doubtless due to the advent of the automobile, the auto truck, and the improvement of the highways which makes motor transportation feasible. (Note.)

American Saddle — With five reported exceptions—Hendricks, Jefferson, Marion, Pike, and Starke counties—the introduction of the American Saddle horse into Indiana is within the present century. By 1926 this breed was represented in twenty-three counties located chiefly in the southern half of the state.

Hackney — The Hackney horse was reported in Benton county in 1875 and in Vermillion county in 1878. Its introduction into the state was chiefly in the three decades ending in 1910. This breed is distributed chiefly in the central and southern counties.

Other Horses — The Arabian horse was reported in Jasper county in 1867, and in Jay county in 1915. The Suffolk, a blocky English draft horse, was reported in Allen county in 1914.

Shetland Pony — According to the 1908 report of the State Bureau of Statistics, the Shetland pony was then found in thirty-two counties fairly well distributed over the state.

Welsh Pony — The same report showed the Welsh pony in Blackford, Delaware, Monroe, Porter, and Wayne counties.

SHEEP

Sheep were found in Indiana in the first quarter of last century, and there were classes for "fine wool", "middle wool", and "long wool" sheep at the Indiana State Fairs beginning in 1852. But there were no classes for distinct breeds of

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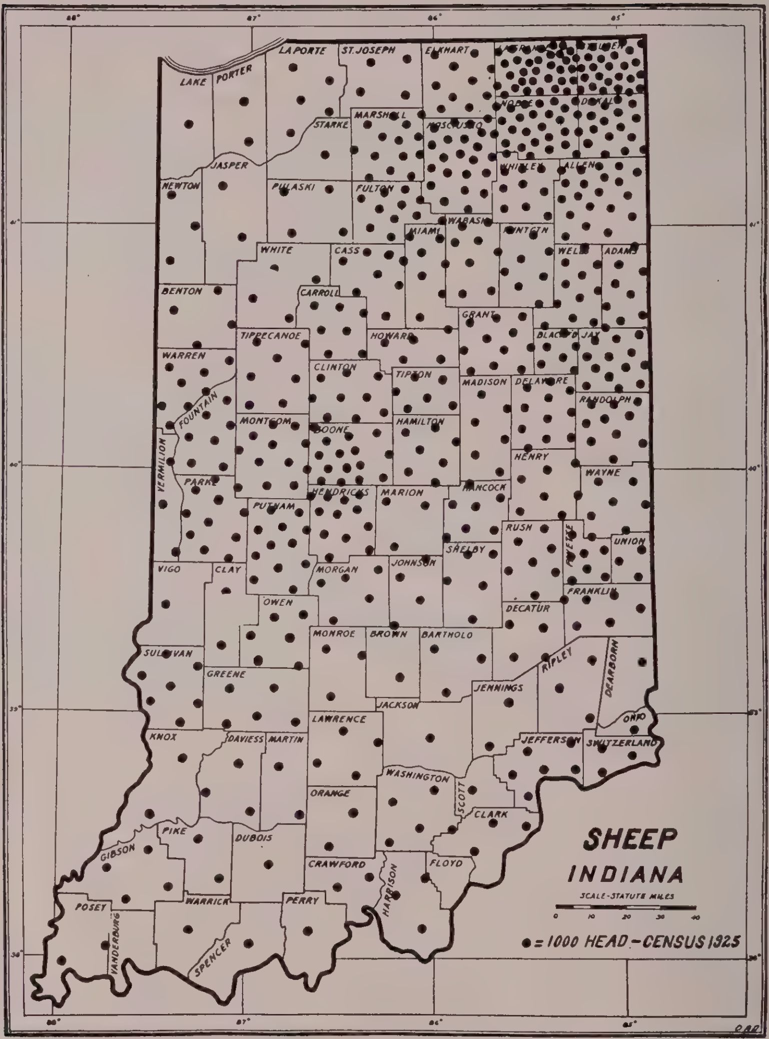
Note — From 1927 to 1934 the shrinkage in the Indiana population of horses was 25 per cent and of mules nearly 22 per cent. As nearly 55 per cent of Indiana farms are less than 100 acres, this shrinkage in animal power would be very serious for the small farmers but for the recent trend in reducing the size and unit cost of farm tractors and harvesters. — Indiana Farmers' Guide, November 24, 1934, p. 15.

sheep until 1866 when the class for "fine wools" included Spanish and French Merinos and their crosses.



This map shows the low production and very uneven distribution of sheep in Indiana in 1924 as based on the State Census, January 1, 1925. It is claimed that Steuben County produces the most sheep and that LaGrange County feeds the most market lambs. It has also been claimed that the people of southern Indiana are too fond of hounds and hunting to permit the sheep industry of that section to flourish.

American Merino—Sheep of Spanish origin called Merino and American Merino appeared in Indiana early in the second quarter of the last century. Their spread occurred mainly between 1850 and 1880; although reported in sixty-five counties prior to 1900, this breed rapidly disappeared in the latter part of last century.[1] It was found in only five counties in 1908.

Cotswold — Although the Cotswold appeared in Indiana in the first quarter of last century, its spread in the state was largely within the two decades ending in 1880. This sheep has been reported in eighty counties but it also waned toward the close of last century. The State Bureau of Statistics reported it in only thirty counties in 1908.

Southdown — The Southdown appeared in the state in 1850 but its spread was largely in the three decades ending in 1890. The Southdown has been represented in sixty-seven counties, but it also decreased about the close of last century, as it was found in only seventeen counties in 1908.

Shropshire — Shropshire at the present time are the most numerous sheep in Indiana. Although this breed is reported to have appeared in Indiana in 1860, its distribution was mainly in the three decades ending in 1900. The Shropshire has been represented in ninety of the ninety-two counties of the state. It also suffered a slight shrinkage as it was found in only eighty-three counties in 1908. Since that date, however, it has appeared in two additional counties.

Leicester — Leicester sheep appeared in a few counties between 1850 and 1880. They later disappeared from the state with the exception of LaGrange county, in which they were still found in 1908.

Oxford — Although the Oxford sheep appeared in Indiana in the fifties, its spread was largely in the last three decades of the nineteenth century. This breed has been represented in sixty counties. The Oxford, like other breeds, suffered considerable shrinkage as it was found in only thirty-nine counties in 1908.

Hampshire — The Hampshire appeared in Indiana shortly after the Civil War, but its distribution in fifty-four counties was very largely in the two decades ending in 1910. Near the close of last century, or perhaps a little later, this breed shared decrease in numbers in common with other breeds of sheep, as prior to 1908 it had been reported in thirty-seven counties while the state livestock census of that year found it in only nineteen counties.

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[1] Bidwell and Falconer, "History of Agriculture in the Northern United States," pp. 218, 219.

Delaine Merino — The Delaine Merino appeared in the state at the time of the Civil War. It came later at intervals, its latest reported introduction being in 1922. The distribution of this breed, however, has been slight, as it has been reported in only fourteen counties.

Cheviot — The first reported appearance of the Cheviot sheep in Indiana was in 1880. Its distribution, however, was largely in the two decades ending in 1910. The Cheviot is found almost wholly in the central and northern thirds of the state.

Dorset — Although the Dorset was reported in a single county in 1870, its distribution was very largely in the decade ending in 1910. This breed has been reported in thirty counties. The Dorset, like the Cheviot, is found in the central and northern thirds of the state.

Rambouillet — The Rambouillet is said to have come into Knox county about 1860, but its distribution was chiefly in the decade ending in 1910. The Rambouillet has been reported in forty-two counties, located chiefly in central and northern Indiana.

Lincoln — The Lincoln sheep appeared in Indiana about 1865 and at intervals spanning the four decades ending in 1900. The breed has been reported in fourteen counties almost wholly in central and northern Indiana.

Other Sheep — The Tunis sheep was reported in Putnam and Tippecanoe counties in 1895, and in Montgomery county in 1896, but it had disappeared from Tippecanoe in 1908. The Suffolk sheep was reported in Kosciusko county in 1908.

DISTRIBUTION OF PURE-BRED LIVESTOCK IN INDIANA PRIOR TO 1860

In the preceding pages the approximate time of introduction of the several classes and breeds of improved livestock has been given. The number of counties into which one or more breeds of each class of pure bred livestock had spread prior to

1860, according to reports received, is as follows: cattle, 43 counties; swine, 13; horses, 36; sheep, 30; poultry, 10.

IMPROVEMENT OF INDIANA LIVESTOCK

Assuming that under the same conditions the different breeds in the several classes of livestock would have an equal influence in improving the livestock of the state, and taking into account the length of time in the state, the distribution, and the number of animals in 1908, the principal breeds would ranks as follows:

Beef Cattle—Shorthorn first, Hereford second, Aberdeen Angus third, Polled Shorthorn fourth, Galloway fifth.

Dairy Cattle—Jersey first, Holstein-Friesian second, Red Polled third, Guernsey fourth, Ayrshire fifth.

Hogs—Poland-China first, Duroc Jersey second, Chester White third, Berkshire fourth, Hampshire fifth.

Draft Horses—Percheron first, Belgian second, Shire third, Clydesdale fourth, French Draft fifth.

Sheep—Shropshire first, Oxford second, Cotswold third, Hampshire fourth, Rambouillet fifth.

Grading up Livestock—Beginning in Indiana in the early fifties of last century, with the advent of the state and local fairs, there has been a gradual but general improvement of farm animals. Though not a leader in the introduction of blooded stock, Indiana has fairly kept pace in this matter with other equally new states. The fine specimens of cattle, hogs, horses, and sheep shown at the fairs, not only visualized the superiority of good stock but inspired effort to improve the quality of the common herds and flocks. Pure-bred sires were purchased by the more enterprising farmers with which to grade up their livestock. Grade sires were used by those who thought they could not afford the pure-breds.

Pure-bred Herds and Flocks Started—Little by little as the improvement effected by good blood became manifest, small flocks and herds of pure-bred farm animals began to multiply until, at the present time, it would be difficult to find in the state any of the so-called native stock. There is of course much room for further improvement, but it is encouraging to know that practically all the livestock of the state show in some degree the impress of good blood. Although the general movement in livestock breeding has been forward and upward in Indiana, as elsewhere, there have been fluctuations in both beef and pork production due to economic conditions.

Beef-dairy Cross-breds—When commercial dairying began to develop in Indiana in the last quarter of the nineteenth century, two opposite tendencies in the breeding of dairy cattle set in. One was a fresh impetus given to the breeding of pure-bred dairy herds, first of Jersey and later of Holstein-Friesian cattle. The other was the breeding of cross-bred cattle by the use of Jersey sires on the cows of the beef-and-milk type, in the hope of increasing the dairy product of the progeny. The result of the latter course was often disappointing to the dairyman and very harmful to beef production. The really constructive breeders, however, kept steadily on through both dull and prosperous periods in breeding pure-bred cattle. To these breeders great credit is due. The trends in hog breeding will be considered later.

Fads in Breeding—In Indiana, as elsewhere, the pure breeds have suffered from the color mania, popular blood lines, long pedigrees, and fancy show-ring points; but, through all these vagaries, the animals of real utility have forged ahead and are now in popular demand.

Improvement of Pure-breds—Since their introduction into the State the pure breeds of domestic animals have undergone improvement in both form and function. This has been effected, (1) through the intelligent and persistent mating of animals of good breeding and individual merit to secure the more uniform transmission of desired characteristics, and (2) through better feeding and care, to provide the favoring conditions for the fullest development of the desired qualities. By these means the succeeding generations of farm animals have become increasingly prepotent in transmitting uniform excellence in both form and function. Thus, for example, the improved conformation of the work and of the meat-producing animal, the greater flow of milk, and the increased weight of fleece have been effected. By the same means, plus training, the speed and endurance of the fast horse have been improved.

Examples—The following concrete examples will serve to illustrate the improvement that, to a greater or less extent, the several breeds of domestic animals have undergone in Indiana in the last seventy-five years:

The Beef Animal—The Hereford and beef type of Shorthorn best illustrate the improvement in beef conformation. Early specimens of the former were often light in the hind quarters, but this defect has largely disappeared and the result is a more symmetrical type of animal. The early Shorthorn type was rather long and large of frame and slightly "leggy", while the modern type is lower-set, rounder and more compact. Thus both the Hereford and the Shorthorn of today exemplify the approved beef form, of which the Aberdeen Angus is a good pattern.

Dairy Cow—Many of the earlier specimens of the dairy breeds were rough-looking; very angular, coarse in the head, with an uneven back line. There were heavy milkers among them, but the average was not high. The modern dairy cow, as exemplified by the Jersey and Holstein-Friesian,—the two leading dairy breeds in Indiana,—has a smoother, more shapely form, a straighter back-line, a neater head, a more pronounced wedge shape, a larger and more symmetrical development of the udder, and a greater average flow of milk.

The state champion ton litter produced by Jenkins Brothers, Orleans, Indiana, in 1926, in co-operation with the Animal Husbandry Department of Purdue University. These seventeen pure bred Durocs weighed 4925 pounds when 180 days old.—Photo furnished by the Animal Husbandry Department of Purdue University.

Lard Hog—The popular butcher's type of hog in 1850 was a distinct improvement in form and fattening quality over the "elm-peeler" of the early days. There was, however, still a demand for the larger, long-sided, strong-boned hog that could travel many miles to market, carrying 350 to 600 and even 700 pounds. The packers then paid a premium for heavy hogs, and as corn was cheap the cost of production was not seriously considered by the feeder.

Refined Hog—Beginning about 1870 the market demand set in for a small, more compact, low-set type of hog. This type also suited the Indiana feeder as it would mature earlier, convert corn into pork more economically, and be readily marketable by train or truck.

This refinement reached its apex about 1910, when, owing to decreasing fecundity, the sows had increasing difficulty in farrowing and produced twins and triplets instead of large litters.

Size and Fecundity Sought—This over-refinement caused the hog breeders again to favor a larger type. The result was a hog, lacking in middle and in the smoothness and quality desired by the packer, a hog that did not fatten well at market weight.

Smoother Type Demanded—Since 1920 the ideal has been a large but smoother and shorter legged type, with capacity of the sows to produce large litters. We thus see that economic considerations have, from time to time, variously influenced the type of hog in demand. Because of its short life-cycle and plasticity, the hog, perhaps better than other farm animals, illustrates the ease with which form and function can be molded by man to desired ends. This almost creative power of the breeder should inspire him to strive for the best in type and utility of domestic animals.

Draft Horse—The different breeds of draft horses have undergone some change better to adapt them to conditions in the United States. These changes, which have occured in Indiana as well as elsewhere, are perhaps best illustrated by the Belgian breed. The docility and easy-keeping qualities of the Belgian[1] early won favor, but its blocky low-set body and rather slow action were not so well suited to the wider areas of American farming. Their necks have been somewhat lengthened, thickness of throatlatch and body reduced, and legs and feet improved, giving better style and action. These changes with their easy keeping, which enables them to come into high conditions early, adapt the American type of Belgian more fully to the ideals of the breeder and dealer.

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[1] Plumb, "Types and Breeds of Farm Animals," Rev. Ed., pp. 125-128.

Improved Sheep—There has also been an evolution in the breeds of sheep in Indiana as elsewhere, resulting in improvement in mutton form and quality, greater length of staple, and increased weight of fleece. These several changes are best exemplified in the present conformation of the French Merino or Rambouillet, and in the fleece of the Downs or Middle wool breeds.

Type Illustrations—In the preceding paragraphs mention has been made of several breeds whose changes in form or function best illustrate the several adaptations to desired ends that have been effected with the passing of the years. It must not be inferred, however, that such mention is intended to express a preference for the breeds named.

The Lesson of Improvement—The plasticity of plant and animal life under the molding hand of man, and the increasing ease and certainty with which desired changes can be effected through a growing knowledge of the laws of plant and animal breeding, should encourage continued effort to evolve from both plant and animal further adaptations to human needs.

Chapter XII.

EARLY IMPORTERS AND BREEDERS OF IMPROVED LIVESTOCK

THE RECORD of livestock in Indiana would be very incomplete unless mention were made of the leading pioneer importers and breeders who, by their investment in good blood, their sacrifice, unstinted effort and contagious enthusiasm have built up and sustained the livestock industry through all its ups and downs, and made it possible for the rank and file of Indiana farmers to enjoy the benefits of widespread livestock improvement.

Cattle Breeders

Shorthorn Improvers—Sanders in his "Shorthorn Cattle"[1] makes special mention of five pioneer Indiana Shorthorn men and gives a long list of other early Shorthorn breeders in the State.

Chris. Whitehead, previously mentioned, of Franklin County, was the first to import Shorthorns into Indiana direct from England. This was in 1838. The supposed descendants of these cattle were bought up by the Shakers of western Ohio, thus largely depriving Indiana of livestock improvement from this source.

Dr. A. C. Stevenson of Putnam County, styled by Sanders the "Nestor of Shorthorn breeding in the Hoosier State", made the second recorded importation of Shorthorns into Indiana direct from England in 1853. These animals proved highly useful in improving the common stock and in promoting interest in the Shorthorn breed. Dr. Stevenson continued to breed Shorthorns for many years. He was highly influential in advancing Shorthorn interests, and was elected the first president of the State and National Shorthorn Breeders' Associations, both of which were organized in the city of Indianapolis in 1872.[1, 2]

Gen. Sol. Meredith[3] of Cambridge City began in 1851 the founding of his Oakland Farm herd of Shorthorns which later

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[1] "Shorthorn Cattle," pp. 262, 263, 324.

[2] Report of the Indiana State Board of Agriculture for 1872, pp. 74, 393.

[3] Sanders "Shorthorn Cattle," pp. 321, 323.

Aberdeen-Angus bull "Blackcap Revolution," Grand Champion at the 1924 International Live Stock Exposition.

Aberdeen-Angus cow, "Blackcap of Glenrock 3rd," Grand Champion at the 1929 International Live Stock Exposition.

NOTE: These and the succeeding pictures show the development of the leading breeds of live stock in Indiana at the close of the first quarter of the twentieth century.

gained international reputation. Gen. Meredith made his first purchase of Shorthorns in 1836. He was for many years a highly successful breeder and exhibitor and rendered notable service in awakening interest in Shorthorn cattle.

Thomas Wilhoit[1] of Henry County began breeding Shorthorns (at first unrecorded) in 1851. His neighbors laughed at him for his extravagance in paying $35.00 per head for these cattle, but Mr. Wilhoit persisted and, later, paid as high as $500 for single animals. Such enterprise in the face of obstacles could have but one result, and the Wilhoit herd later became one of the best in the West.

J. H. Miller of Peru established a fine herd of Polled Durham (hornless Shorthorn) cattle in the eighties of last century. Some cattle of his breeding were exported to South America.[2] Mr. Miller considered horns a mere incident, to be removed almost at pleasure by the use of prepotent polled animals. He made free use of horned Shorthorns when it seemed to him to be desirable in maintaining the high standard of his herd. Mr. Miller was chosen secretary of the National Polled Durham Association organized in 1889.

William J. Barnett, Alvis Bastian, and B. A. Barnett, all of Clark County, began breeding Shorthorn cattle in 1884.

The best recent example of constructive Shorthorn breeding in Indiana is the Robbinwood herd of the Robbins family for three generations, of Horace, Decatur County. The founding of this herd was begun 1882 by Mr. J. G. Robbins, recently deceased at the ripe age of almost 98. Later his son Will S.[3] (deceased), took charge, and, at the present time, his grandson, Earl S. Robbins, is continuing the business. At the outset the aim was to improve the beef cattle of the locality. Scotch bulls were chosen to head the herd. Through periods of depression as well as in times of prosperity the quality of the herd has been maintained and steadily improved. In consequence, Shorthorns of the Robbins herd have been widely distributed in the United States and several have gone to Mexico and South America.

Improvers of Herefords — Among Indiana Hereford breeders the names of Adams Earl and Chas B. Stuart of Lafayette,

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[1] Sanders "Shorthorn Cattle," pp. 323, 661, 662.

[2] Ibid, pp. 780, 990.

[3] One of Ivins and Winship's "Fifty Famous Farmers."

Moses Fowler and William S. VanNatta of Fowler, and Warren T. McCray of Kentland stand out in greatest prominence.

In the Shadeland Farm herd of Messrs. Earl and Stuart, established in 1880, were assembled some of the finest specimens of the Hereford breed to be found in England. Many fine prize-winning cattle were bred and reared on Shadeland farm under the fostering care of the herd manager, John Lewis, and this farm in its palmy days, with its herd of between 200 and 300 Hereford beauties, was in many respects the most attractive in America.[1] Many noted breeding animals came from the Shadeland Farm herd. Mr. Stuart, though a lawyer by profession, had charge of the breeding operations of the firm. "He possessed one of the keenest minds ever attracted to cattle breeding problems in the United States." His untimely death due to overwork was a great loss to the cattle breeding industry.

Messrs. Fowler and VanNatta began the breeding of Herefords about 1878 and continued in the business for more than a quarter of a century in a firm that was highly influential in developing the cattle breeding business. Mr. Fowler had a large area of native prairie land in Benton County. Mr. Van Natta had been a feeder and shipper of cattle to the eastern markets. Neither member of the firm owned any Hereford cattle at that time. In 1877 Mr. VanNatta's attention was drawn to the white faced cattle and thinking that they would mature earlier and make more beef off grass than the kind of Shorthorns then available, he decided to establish a breeding herd of Hereford cattle. Not being satisfied with the bull which Messrs. Earl and Stuart had purchased in 1880 for him in England, Mr. VanNatta bought of Messrs. Burleigh and Bodwell of Maine the imported bull Tregrehan that became a noted sire and was the real founder of the Fowler and Van Natta herd. Many of his get became noted show animals. As Hereford grades became available, they were turned onto the prairie pastures and soon demonstrated their fine grazing qualities. Mr. VanNatta was the managing partner and his keen instinct as a breeder found expression in his resolution "to widen out and improve the hind quarters of these (Hereford) cattle".

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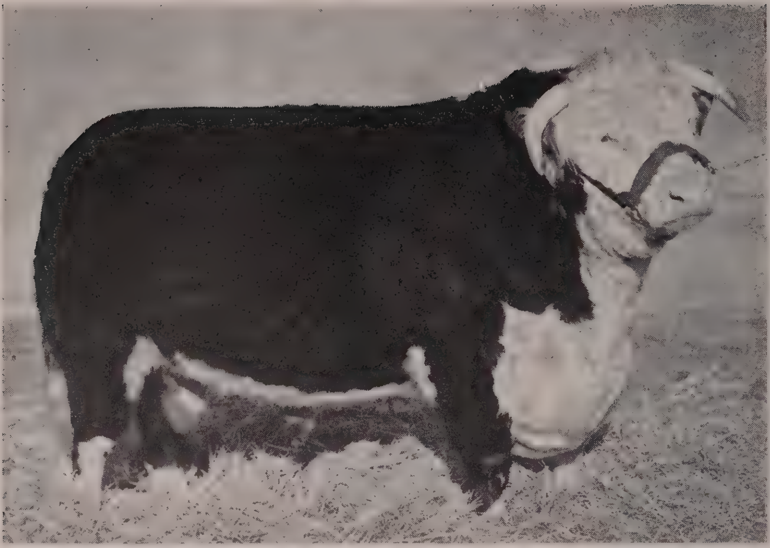
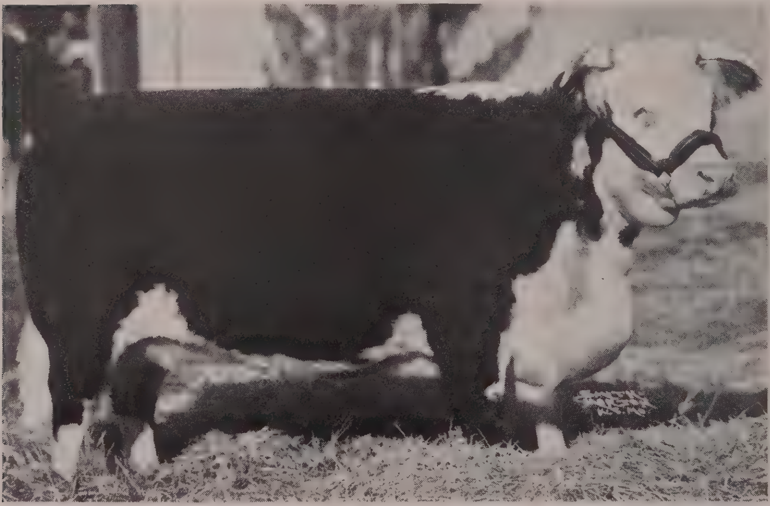
[1] Sanders: "The Story of the Herefords," pp. 442, 457.



Hereford bull "Belmont Hartland," Grand Champion at the 1929 National Western Stock Show, Denver, Colorado.



Hereford cow, "Ino," Grand Champion at the 1930 American Royal, Kansas City, Missouri.

Warren T. McCray inherited his interest in cattle from his father, who handled many feeders. His first purchase of Herefords was from the herd of VanNatta and Son in the fall of 1905. The following spring he purchased a herd bull and several more cows. In the fall of 1906 Mr. McCray bought Prime Lad 3rd., grand champion bull, and Prairie Queen, junior champion female at the Indiana State Fair. In the fall of 1907 McCray began his career in the show-ring with five animals. Later with his Fairfax family of Herefords Mr. McCray became widely known as a breeder and exhibitor of prize-winning cattle, and, like the others mentioned above, rendered a large service in livestock improvement.

Clem Graves and A. C. Huxley of Miami County, and Frank A. Nave of Fountain County, with other Indiana breeders, performed well their part in upholding the Hereford standard. J. W. VanNatta and Henry W. Marshall are prominent recent Hereford breeders.

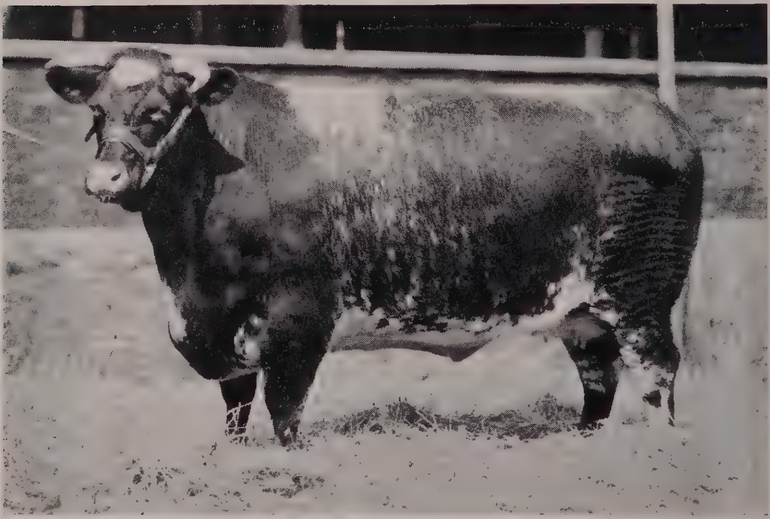
Aberdeen-Angus Breeders—Though less numerous in Indiana than either Shorthorns or Hereford, many fine Aberdeen-Angus cattle are in the state. One of the earlier breeders was J. W. Wheatly of Kempton. Another was Fred Gouty of Vermillion County, who began breeding these cattle about 1880. Other early breeders were Dr. J. H. Brill of Indianapolis, Simpson and Hogue of Vincennes, and F. C. Fleming, M. A. Judy and William Goodwine of Warren County. Prominent recent breeders of Aberdeen-Angus cattle are W. W. Wilson of Muncie, H. A. Thompson of Jackson County.

Galloway Breeders—Prominent early breeders and exhibitors of Galloway cattle were: I. B. Lutz of Tippecanoe County; Broodside Farm and David McKay of Allen County; and Hess and Company of Morgan County.

Polled Shorthorn Breeders—The earlier breeders of Polled Shorthorn (Durham) cattle were: J. H. Miller of Miami County; F. S. Hines of Marion County; S. R. Quick and Son of Morgan County; A. C. Wood and Son of Madison County; and Oscar Hadley of Hendricks County.

Jersey Breeders—Churchman and Jackson of Indianapolis appear to have had the largest herd of Jersey cattle in the seventies. Other early Jersey breeders were Henry Baum of

Shorthorn bull 'Sni-a-bar Courtier." In 1928 this bull was nine times a Grand Champion, defeating every bull that won Grand Championship honors that year.



Shorthorn cow, "Dorothy Anoka," Grand Champion at the 1925 and 1926 International Live Stock Expositions.

Frankfort, Samuel McKeen of Terre Haute, J. P. Luce and Sons of Tippecanoe County, Dr. D. W. Voyles of New Albany, L. U. Hasselman and S. J. Fletcher of Indianapolis, M. F. Collier of Kendallville. Many other Jersey herds were started in the decade ending in 1880.

Holstein-Friesian Breeders—According to F. L. Houghton, Secretary of the Holstein-Friesian Association of America, the following were the pioneer owners of registered Holstein-Friesian cattle in Indiana: T. H. Anderson of Parke County, 1877; W. O. Jackson of St. Joseph County, 1878; S. P. Lewman, Clark County, 1881; A. M. Kennedy and Son, Rush County, in the early eighties.

Devon Breeders—In the fifties the Indiana exhibitors and doubtless also breeders of Devon cattle were: J. Kenyon and Joel Cox of Wayne County; L. G. Colliers and J. Middleton of Montgomery County; E. N. Shimer of Marion County; and Hezekiah Collins of Hamilton County.

Ayrshire Breeders—At the earlier State Fairs the exhibitors, who were doubtless also breeders of Ayrshire cattle were J. S. Dunlop, Geo. E. Wallace, and T. S. Graves of Indianapolis, and Jessup and Company of Elkhart. In the nineties James Oliver of South Bend established an Ayrshire herd.

Red Polled Breeders—Mr. H. A. Martin, Secretary of the Red Polled Cattle Club, sends the following list of early Indiana breeders of Red Polls: George Eutzler, St. Joseph County; I. M. Miller, Grant County; T. W. W. Sunman, Ripley County; V. S. & W. M. Goodsell, Johnson County; William Musselman, Miami County. Mr. W. E. Pinney of Porter County was also an early breeder of Red Polled cattle.

Guernsey Breeders—The American Guernsey Cattle Club Register shows that the early Guernsey breeders in Indiana were: William Niles, LaPorte; J. M. Grimes, Mishawaka; J. M. Reynolds, Lafayette, and J. P. Ross, Wabash.

Brown Swiss Breeders—Probably the first to bring Brown Swiss cattle into Indiana was Menno S. Yoder of Elkhart County. His first purchase was in 1907. Other more recent breeders of these cattle are: J. L. Fuelling, Jefferson County; J. M. Gerig, Allen County; C. L. Strickland, Lake County; Fred Zimmerman and Viola Dodge, Noble County. W. H. Osborn, Kokomo, began breeding Brown Swiss cattle in 1916.

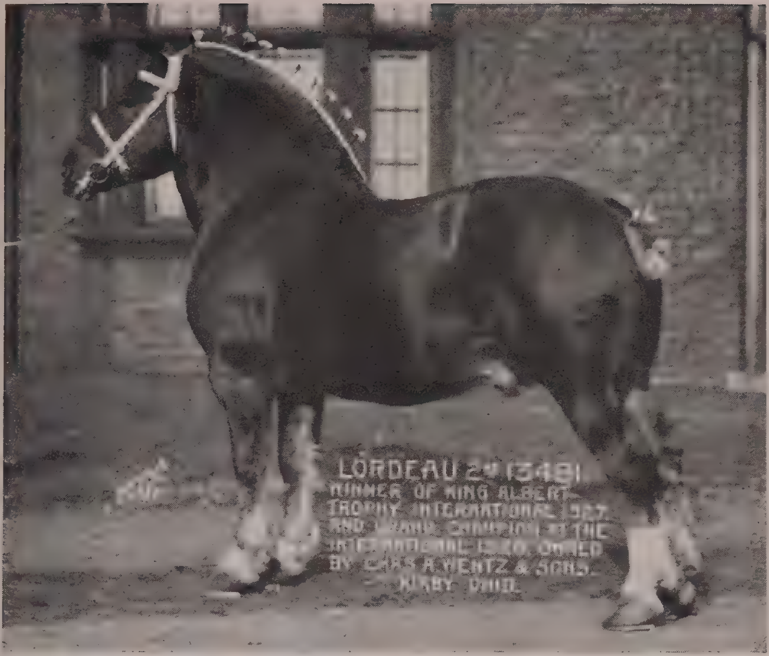
HORSE BREEDERS

Breeders of Thoroughbreds — The earliest Indiana horse breeder of whom the writer has learned was William Wilson of Brookville. Young Venetian (without doubt a Thoroughbred) was bred by Mr. Wilson in 1836. This horse traced back through Virginia stock to an imported English sire. Director, a "Bertrand horse from Kentucky", was brought to Franklin County by James Conwell in 1835. Red Rover, of pacing descent, was brought into Franklin County in 1832. In 1836 J. Woods brought to Franklin County from Ohio the Thoroughbred turf horse, John Richards, Jr.

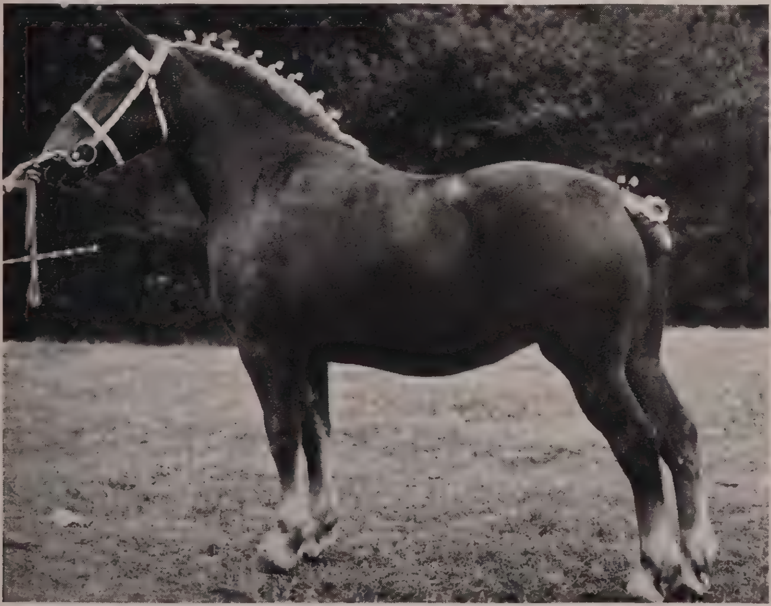
Horses classed as Thoroughbreds were first shown at the State Fair of 1853. The Indiana exhibitors who won premiums in that class were: Marchald Garrett, Montgomery County; Anderson Sutton, Union County; Daniel Weisiger, Vermillion County; John W. Reeves, John Call and Joseph D. Frakes, Putnam County; George Smith, Clinton County; T. C. Moore, Carroll County; Cyrenius Taylor, Cass County.

Breeders of Standard Breds — Classes for pacing and trotting horses (presumably Standard bred) first appeared in the State Fair premium list of 1854. The Indiana men who won premiums on these horses in 1854, 1855 and 1856, and who were doubtless breeders also, were: William Lewis and Charles Frost, Fayette County; Isaac Young, John Q. Willman, Joseph Ray, B. Binney, J. T. Young and J. D. Storms, Jefferson County; James Wilson and J. N. Shawhan, Rush County; W. T. Dennis and William Conway, Wayne County; David O'Haver, Hendricks County; Francis Gradbe, Clarke County; Clinton Taylor, Tippecanoe County; W. H. Turner and W. E. Wood, Marion County.

Another breeder and trainer of pacing and trotting horses was Tilford (Buck) Dickerson of Greensburg. His daughter, Mrs. Charles L. Dobyns, writes that he bred and trained about 800 trotters and pacers in his long career as a horseman, which began about 1870. According to an authentic article written in 1901: "Undoubtedly Tilford Dickerson bred, drove and trained more horses to records faster than 2:30 than any other man who ever lived." Other fast horse breeders of that period were John Bebout of Rushville, John Ross of Madison, and Wm. P. Ijams of Terre Haute.


LORDEAU 2ND 13481
WINNER OF KING ALBERT
TROPHY INTERNATIONAL 1927
AND GRAND CHAMPION AT THE
INTERNATIONAL 1928. OWNED
BY CHAS. A. WENTZ & SONS.
KIRBY OHIO.

Belgian Stallion, "Lordeau 2nd," representing the present American type. Lordeau 2nd was the Grand Champion at the 1928 International Live Stock Exposition.



Belgian Mare, "Roachdale Hazel," Grand Champion at the 1930 Indiana and Wisconsin State Fairs, Junior Champion at the 1930 National Belgian Horse Show, Waterloo, Iowa, and Junior and Reserve Grand Champion at the 1930 International Live Stock Exposition.

Clydesdale Stallion, Lochinvar 25468 Grand Champion, 1932 International Live Stock Exposition. Photo—courtesy, Clydesdale Breeders' Association.

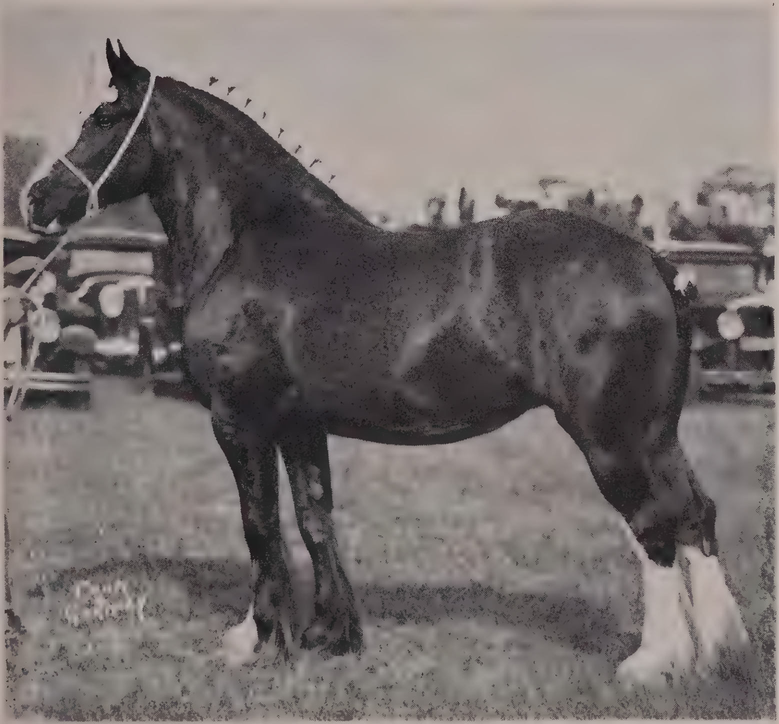
Percheron Breeders — As two or more draft breeds of horses were placed in the same class at the earlier state fairs, we cannot be sure what breeds were then shown.

In the class for "Heavy draft", Norman, French Draft, and Percheron horses were shown by Indiana breeders in the eighties as follows: Cal Bates, Fayette County; Crumpacker and Winters, LaPorte County; J. G. Graham, Rush County; Indianapolis Importing and Breeding Stock Company; J. R. Ludlow, Marion County; Bridgeland and Berry, Indianapolis; Wabash Importing Company; J. W. McNamara, and M. G. Wilson, Hancock County; S. S. Crogan, Cass County; M. D. Hensler, Miami County; Door Prairie Live Stock Association, LaPorte County; F. G. Barry, Indianapolis; J. M. McMillin, Rush County. Other Indiana Percheron breeders of this period, according to Sanders' "History of the Percheron Horse", were: S. Crumpacker, and R. F. Small of

LaPorte County; H. Hulman of Terre Haute; A. P. Nave, Geo. D. Enyart, C. A. Randolph, William Day, L. A. Rickel, and Granville Kesling. J. Crouch and Son of Lafayette and L. W. Cochran were heavy importers and contributed much to Percheron progress in Indiana.

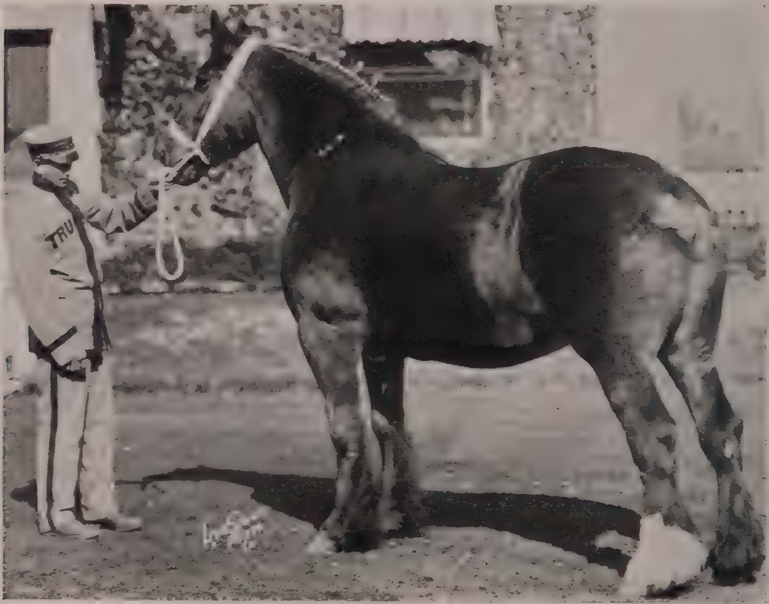
French Draft Breeders—The exhibitors of French Draft horses at the State Fairs in the eighties were: W. G. Wilson and J. W. McManee, Hancock County; S. S. Crogan, Cass County; Bridgeland and Berry, Marion County; Smith Carnes, Delaware County, and the Wabash Importing Company.

Shire Horse Breeders—We are indebted to Mr. W. G. Lynch, secretary of the American Shire Horse Association, for the following list of early Indiana breeders of Shires: Gray Brothers, Banks and Hilt, later Banks and Closser, and George Graham of LaPorte County; David McKay, Fort Wayne;



Clydesdale Mare, Green Meadow Black Gown 23351 Grand Champion, 1934 International Live Stock Exposition. Photo—courtesy Clydesdale Breeders' Association.

Shire Stallion, "Laddie," Champion 1930 International Live Stock Exposition.



Shire Mare, "Hoblin Bousor," Champion 1930 International Live Stock Exposition.

Percheron Stallion, Cy Loet, Grand Champion at the Indiana and Ohio State Fairs and the 1932 International Live Stock Exposition.

John M. Gaar, Richmond; Clover Valley Live Stock Association, Parke County; S. C. Cowgill, Madison County; C. M. and J. M. Highley, Grant County; Keyt and Rice, Marion County; E. S. Vandermark, Hancock County.

Clydesdale Breeders—Margaret Coridan, Secretary of the American Clydesdale Association, has given the following names of early Indiana Clydesdale breeders: Will H. Ade, Kentland; George W. Baker, Wayne County; W. A. Banks, Door Village Stock Association, and William Nites, LaPorte County; J. H. Bass and David McKay, Fort Wayne; F. W. Cochran, Peed and Risk, and John Walker, Henry County; S. J. Fletcher, Indianapolis; W. H. LaGrange, Johnson County; V. K. Officer, Jefferson County; E. M. Pickard, Delaware County. Later Clydesdale breeders were Otto E. Wyrick and Mike Orr, Tipton County.

Belgian Breeders—Mr. J. D. Conner, Jr., Wabash, Secretary of the American Association of Importers and Breeders of Belgian Horses, founded at Wabash, Indiana, in 1887, writes that Harmon Wolf, the association's first president, has been the most prominent importer and breeder of Belgians. This is an Indiana Association, as all but three of its sixteen charter members are residents of Indiana. Later J. Crouch and Son, Tippecanoe County, joined the association and imported and bred many fine Belgian horses.

German Coach Breeders—In the nineties the following were Indiana exhibitors of German Coach horses at the State Fairs: Lafayette Stock Farm (J. Crouch & Son); Alonzo Young, Crawfordsville; J. T. Pressley, Indianapolis; Barker and Thompson, Boone County.

French Coach Breeders—The Nicely Stock-breeding Company of Union City, Randolph County, exhibited French Coach horses at the Indiana State Fair in 1892, the only year in which there was a separate class for this breed. In the class for both French and German Coach horses there were in 1890 and 1891 the following Indiana exhibitors: Thompson and

Percheron Mare, "Maple Grove Leila," several times a Grand Champion at the International Live Stock Exposition.

Bland, Indianapolis; John D. Pugh, Terre Haute; Milo Tomlinson, Montgomery County.

American Coach Breeders — The Indiana exhibitors of American Coach horses at the State Fair of 1891 were: Fort and Smock, and L. W. Holloway, Indianapolis; George W. Scott and Co., Marion County; Hernley Brothers and Risk and Peed, Newcastle; G. P. Shoptaugh, Putnam County; Alfred Leffew, Clark County; Milo Tomlinson and G. A. Wilcox, Montgomery County; J. W. White, Decatur County.

Hackney Breeders — The Indiana Hackney breeders in the nineties were: Thompson and Bland, Indianapolis, and L. W. Cochran, Crawfordsville, and later, J. Crouch and Son, Lafayette.

Cleveland Bay Breeders — The following were Indiana breeders and exhibitors of Cleveland Bays in the eighties: Door Prairie Live Stock Association, Banks and Hilt (later Banks and Closser), LaPorte County; V. Bankhard, Martinsville; A. Price, Kokomo. L. S. Fitch, LaPorte County, and Riley Stormont, Princeton, were also early breeders.

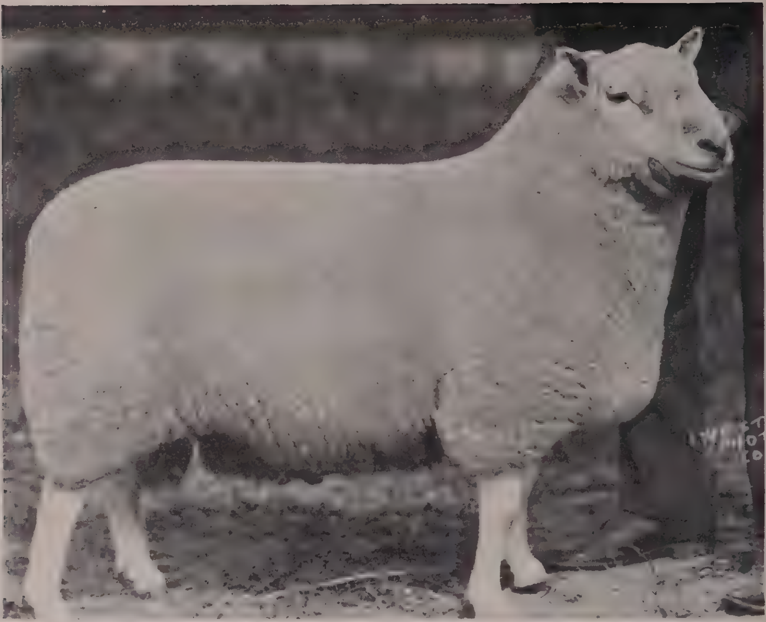
American Saddle Breeders — In the eighties the Indiana exhibitors of American Saddle horses at the State Fairs were: H. B. Sherman, Harry Phillips, Horace Wood, A. C. Remy, and I. S. Gordon of Indianapolis and Allen Jackson and Son, Hendricks County.

Breeders of Morgans — Volney Wilson introduced Morgan horses into Delaware County in the sixties. There was a separate class for Morgan horses in the premium list of the State Fair for 1893 only. That year Messrs. Hernley and Stevens of Salem exhibited sixteen Morgan horses—seven stallions and nine mares.

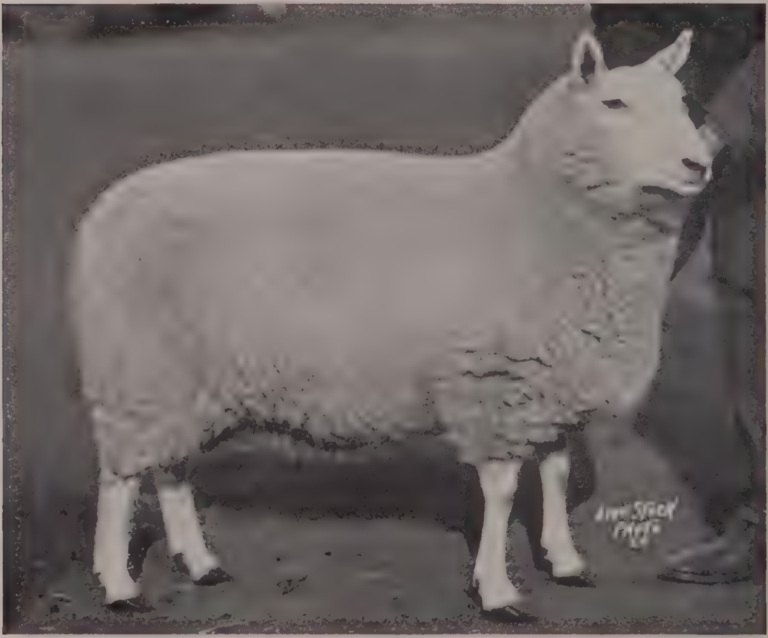
SHEEP BREEDERS

Although Indiana is not a leading sheep state her sheep men have made commendable progress as the following statements, vouched for by the Secretary of the Indiana Sheep Breeders' Association, will show:

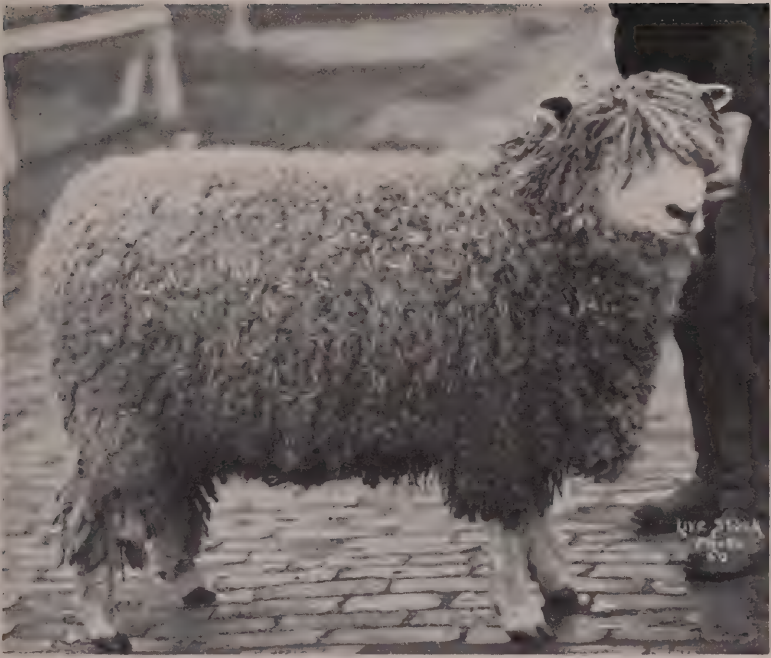
Indiana's Sheep Record — 1. Indiana has produced more grand champion wethers at the International Live Stock Exposition than any other state or province on this continent.



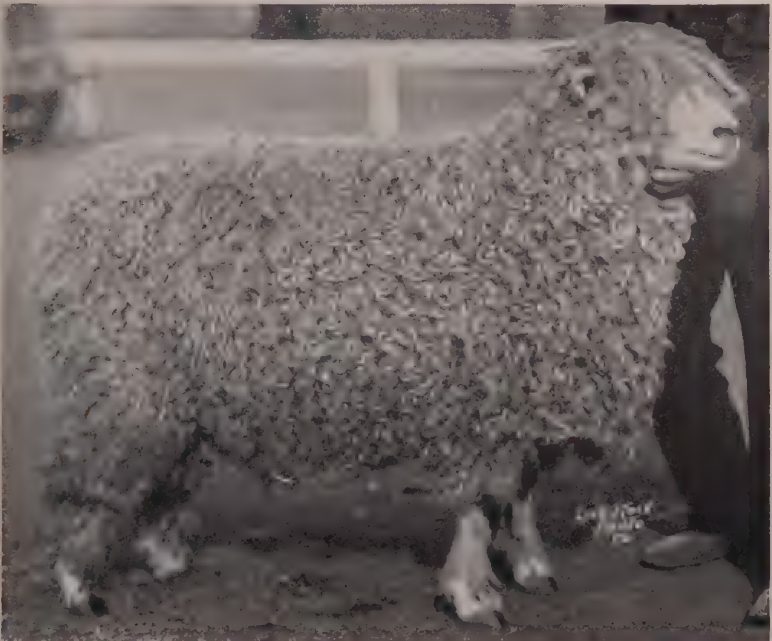
Cheviot Ram, Champion at the 1924 International Live Stock Exposition.



Cheviot Ewe, Champion at the 1927 International Live Stock Exposition.



Cotswold Ram, Champion at the 1928 International Live Stock Exposition.



Cotswold Ewe, Champion at the 1924 International Live Stock Exposition.

2. Indiana founded the American Shropshire Registry Association believed to be the largest pure-bred sheep association in the world, and has been the home of this association for over 40 years.

3. Indiana furnished the first secretary of the Oxford Down Record Association.

4. For more than 60 years Indiana has ranked among the first ten states of the Union in the number of sheep per square mile within her borders. Indiana was one of the first two states of the Union to develop farmer feeders of western lambs.

5. The Indiana Experiment Station has led in disseminating information on the feeding of western lambs.

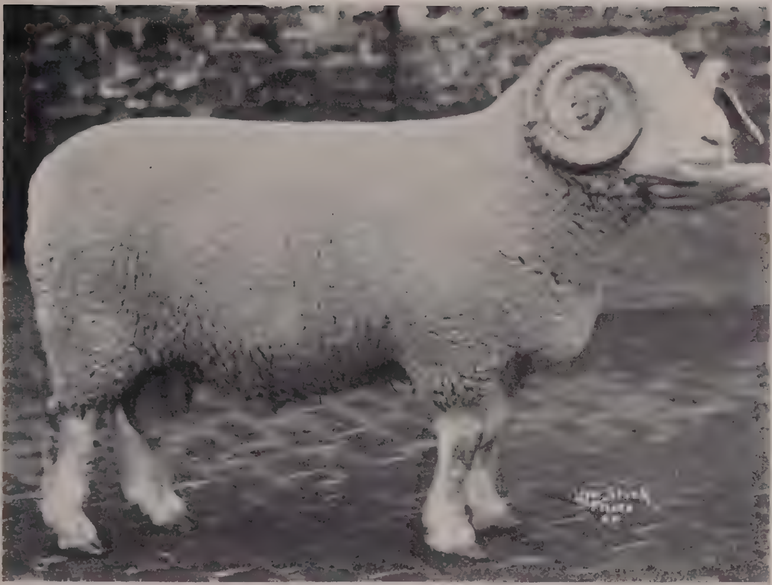
6. Indiana has one of the largest sheep shows in America.

Fine Wool Breeders—The "fine wool" class of the early Indiana State Fairs included Spanish, French, and Saxon Merino and their descendants, styled American Merinos. The earlier Indiana exhibitors of fine wool sheep were, Dr. A. C. Stevenson and Alex. Black of Putnam County; L. G. Collins, Sol. Meredith and Levi Druly of Wayne County; James Shelby, John Indsley, and John Kirkpatrick, Tippecanoe County; D. Braden and Fielding Beeler, Marion County; Samuel Neil, Jennings County; Jacob Taylor, Henry County; John D. Olcott, Cass County; J. D. Wilson, Decatur County. These men were fine wool breeders in the fifties of last century.

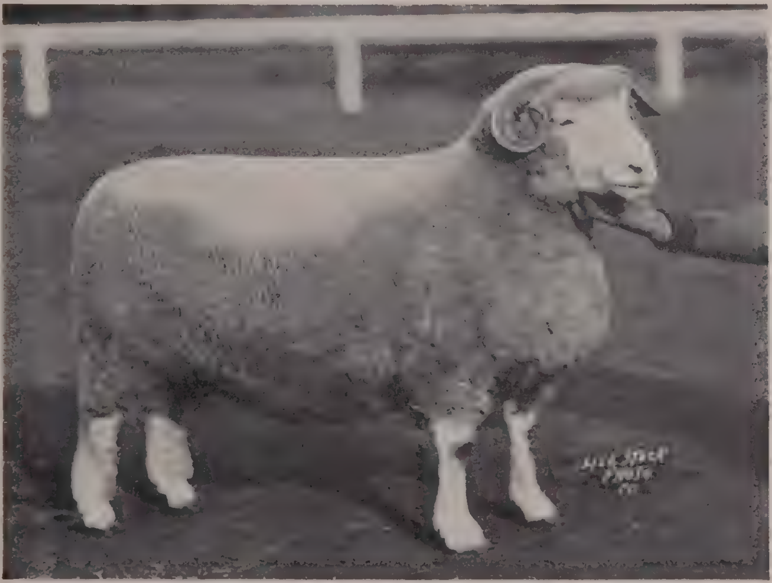
Middle Wool Breeders—The middle wool exhibitors of the fifties were: John Schermerhorn, Fountain County; Geo. C. Millican, Jefferson County; S. D. Baker, Marion County; Geo. Davidson, Levi Druly, Joshua Dye, James Hammond, and Gen. Sol Meredith of Wayne County.

Long Wool Breeders—The exhibitors of long wool sheep in the fifties were: Henry Nichols, Hancock County; Geo. C. Millican, Jefferson County; Wilbur Baker and Fielding Beeler, Marion County; John Levering, Tippecanoe County; Nicholas Druly, Union County; Geo. Davidson and James Hammond, Wayne County; William Whitehead, county not given.

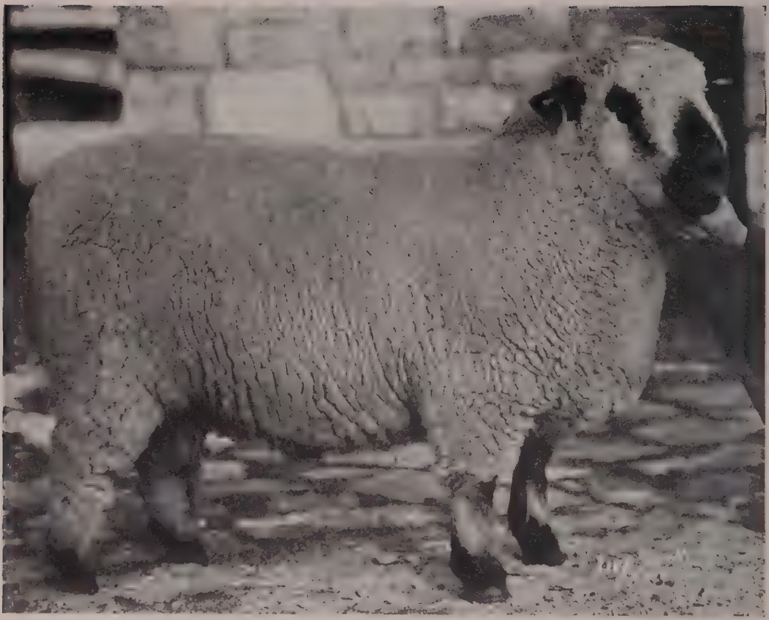
South Down Breeders—The breeders and exhibitors of South Downs in the sixties were: J. D. Lowden and S. K.



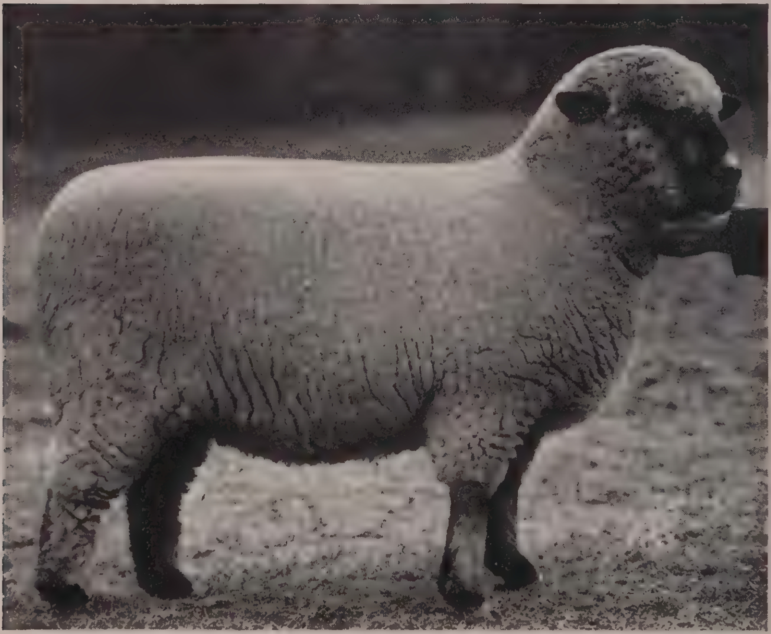
Dorset Ram, Champion at the 1929 International Live Stock Exposition.



Dorset Ewe, Champion at the 1927 International Live Stock Exposition.



Hampshire Ram, Champion at the 1928 International Live Stock Exposition.



Hampshire Ewe, Champion at the 1927 Toronto, Canada, Royal.

Fletcher, Marion County; James Chase and I. D. G. Nelson of Allen County; J. W. Reeves and Thomas O. Allen, Putnam County; Green Wilson, Shelby County; John McCrea Jr., Delaware County. Probably the earliest breeder of South Downs in Indiana was Gen. Sol. Meredith of Cambridge City, his flock having been started in 1857.

Merino Breeders—From 1880 to 1890 the class for fine wool sheep at the State Fairs included with other breeds American Merino Sheep. The only Indiana exhibitors were Thomas Wilhoit of Middletown and Uriah Privet and brother of Greensburg, who were probably breeders of American Merinos. There were probably a few other breeders, though the breed was then waning in Indiana.

Leicester Breeders—Between 1860 and 1870 the exhibitors of Leicester sheep were Geo. Millican of Jefferson County; J. S. Dunlop of Marion County; E. H. Crowe of Putnam County and W. T. Marquess of Wayne County.

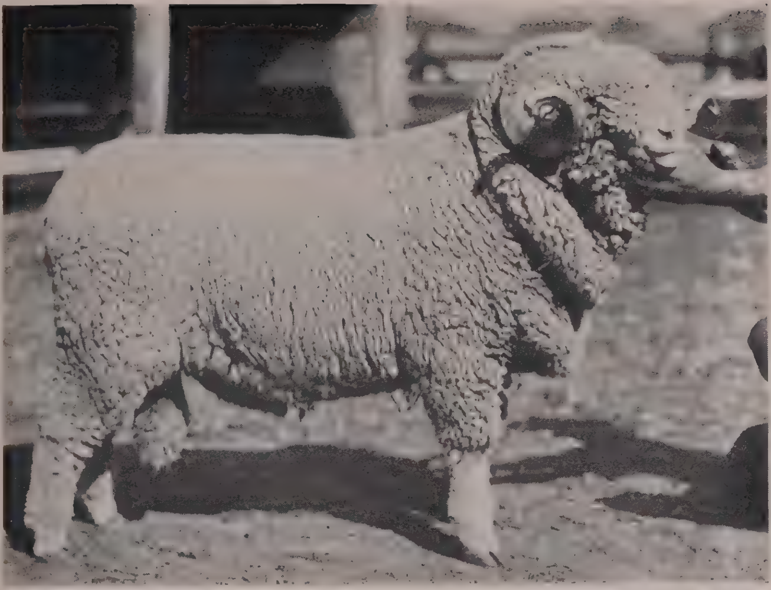
Cotswold Breeders—The earlier Cotswold breeders of the sixties and seventies were J. S. Dunlop, Marion County; Drook and Ward, Union County; S. M. Henderson, Johnson County; Green Wilson, Shelby County. A still earlier Cotswold breeder—in the thirties of last century—was W. W. Thrasher (mentioned in a previous chapter) of Fayette County. Recent leaders in improving the Cotswold are the Wilson Brothers of Muncie.

Shropshire Breeders—The earlier Shropshire breeders, who were also charter members of the American Shropshire Registry Association, organized at Lafayette, Indiana, in 1884, were Albert Henderson and Mortimer Levering, Lafayette; Spencer R. and Walter J. Quick, Bartholomew County; John L. Thompson and Son, Grant County; I. J. and W. F. Farquhar, Randolph County, and I. J. Williams and Son, Muncie. Closely following these were scores of other Indiana breeders of this popular sheep.

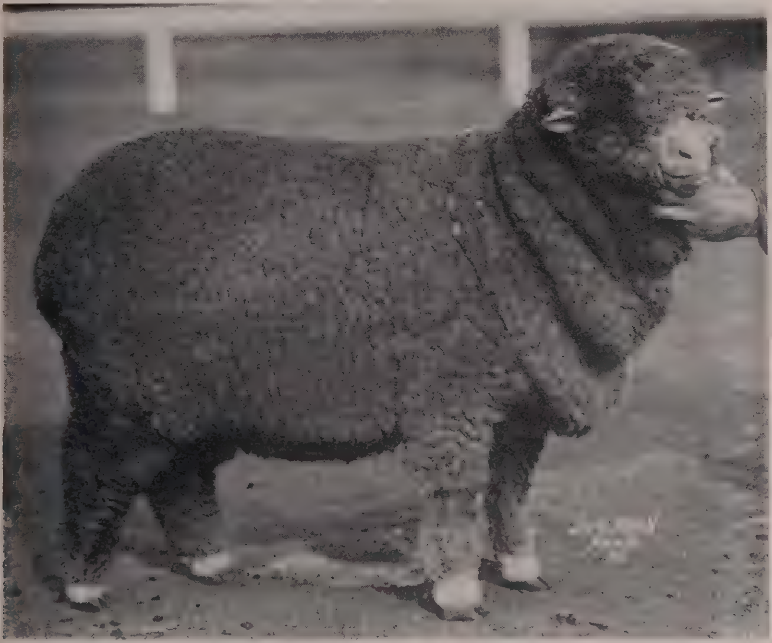
Oxford Down Breeders—Mr. Sunman, the first secretary of the association, names the following early Indiana breeders of Oxfords: H. Anderson, Parke County; W. F. Churchman and Stoten Fletcher, Marion County; R. Hurlman, Vigo

Oxford Ram, Champion at the 1927 International Live Stock Exposition.

Oxford Ewe, Champion at the 1926 International Live Stock Exposition.



Rambouillet Yearling Ram, Reserve Champion at the 1924 International Live Stock Exposition.



Rambouillet Ewe, Champion at the 1927 International Live Stock Exposition.

County; J. Dwiggins, Montgomery County; J. W. Poarch, Monroe County; T. W. W. Sunman, Ripley County.

Rambouillet Breeders—Four prominent Rambouillet breeders are John E. Webb and Son of Marion County; Forgey and Evans, Montgomery County; Daniel E. Lesh, Wells County; Purdue University, Tippecanoe County. The University flock has been maintained in a high state of excellence for 30 years, rams only being introduced for mating with best ewes of the flock.

Cheviot Breeders—Mr. George Parnell of Crawfordsville, whose record of the Cheviot sheep in Indiana was lost in a fire, gives from memory the following early Indiana breeders of Cheviots: Luther Gardner and Simpson Crodian, of Roachdale; Howard Keim of Ladoga; Prof. C. S. Plumb of Lafayette, and H. C. Beckman of Lake County.

Dorset Breeders—Carl H. Gifford, Leroy B. Nash, and John R. Nash, all of Tipton County, were doubtless the earliest

Shropshire Ram, Champion at the 1929 International Live Stock Exposition.

Shropshire Ewe, Champion at the 1927 International Live Stock Exposition.

breeders of Dorset sheep in Indiana. They brought Dorsets to Monroe County in 1894 and to Tipton County in 1900.

Hampshire Breeders—The exhibitors of Hampshire sheep at the State Fairs in the nineties and later were: Foster and Guthrie, Jefferson County; John Milton, Marshville; P. W. Artz, Fayette County; and James West, Blackford County.

Tunis Sheep Breeders—Mrs. Edna G. Grahan of Roachdale, secretary-treasurer of the American Tunis Sheep Breeders' Association, gives the following list of early members of the association, namely: James A. Guilliams, founder, and Milton Bowers, Roachdale; Charles Roundtree, Crawfordsville; Paul Goff, Andrew and James McGaughey, Russellville; Frank Hartman, Raymond Hays and Milton Bridges, Bainbridge; Robert Carter, Odell; G. W. Bence, Greencastle.

Southdown Ram, Champion at the 1927 Toronto, Canada, Royal.

Southdown Ewe, Champion at the 1927 International Live Stock Exposition.

Hog Breeders

Berkshire Breeders—In the early seventies J. Kennedy of New Elizabeth, C. J. Bowen of Knightstown, John Rodgers of Clayton and I. N. Barker and James Riley of Thorntown were exhibitors and breeders of Berkshire swine.

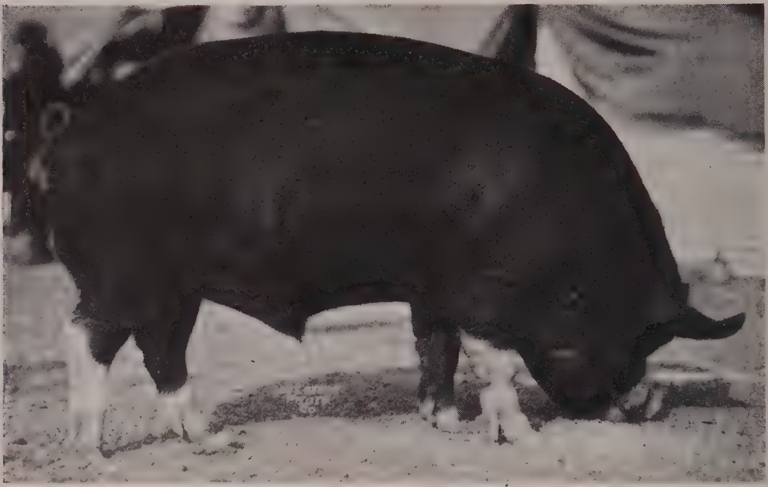
Poland-China Breeders—The exhibitors of Poland-China swine at the State Fairs in the seventies were: R. Baldridge, Hagerstown; James Mustard, Broad Ripple; McCoy and Spahr, Centerville; Armstrong Brothers, Indianapolis; B. Lukins, Pendleton. A later constructive breeder of Poland-China swine was Lloyd Mugg of Kokomo.

Chester White Breeders—A letter from Mr. F. F. Moore, Rochester, Indiana, secretary of the Chester White Record Association, states that when he began breeding these hogs in 1894, he visited the prominent Indiana Chester White breeders of that time. They were: C. T. Beehler and Sons of Union County whose herd was started about 1887; Wiggins and Son of Howard County; Clark and Hillis of Clinton County, and Richard Russell of Boone County. P. L. Johnson of Knox County, is also an early Chester White breeder. There were earlier breeders of Chester Whites concerning whom information has not been received.

Duroc-Jersey Breeders—Following are the early Duroc-Jersey breeders reported and the approximate years when their respective herds were established: Walter Abernathy, Union County, 1888; W. A. Peasons and Son, Boone County, 1890; D. W. Brown, Randolph County, 1885; Carl Scott, Delaware County, 1892; Wm. Finch, Jay County, 1894. Durocs were reported in Indiana some years earlier than the dates above, but the writer has not learned the names of the earliest breeders.

Essex Breeders—There was a separate class for Essex hogs at the State Fairs of 1871 and 1872. The exhibitors of Essex swine in these years were: O. P. Cobb and Sons, Aurora; S. F. Pentecost, Boone County; A. P. Wiley, Marion County; C. W. Sims, Danville. Other early Essex breeders were A. C. Green and Sons of Winchester, and George Ineichen of Jay County.

Hampshire Breeders—Early breeders of Hampshire swine were: James D. Kiger, 1893, the Hon. H. F. Work (deceased), 1894, L. E. Botorf, 1896, Clark County; F. L. Obenchain, 1894, Cass County; S. H. Judy, 1895, Putnam County; R. G.



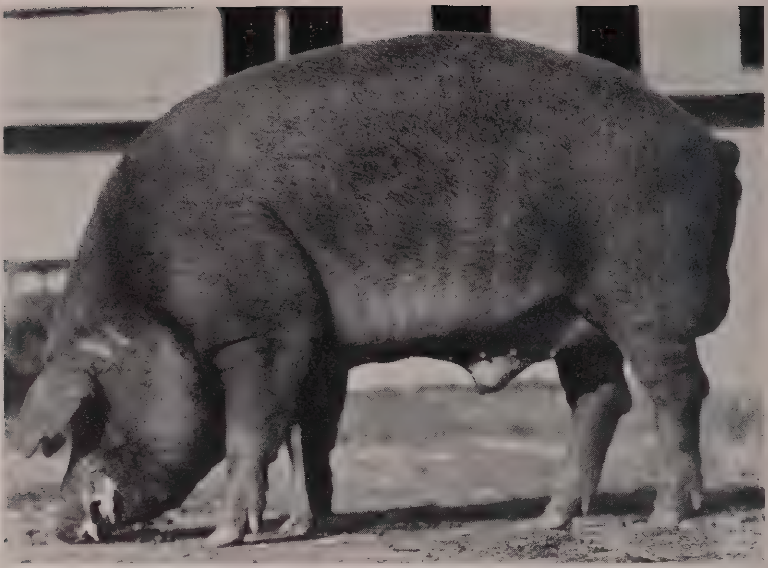
Berkshire Boar, "Astounder," Junior Champion at the 1924 National Swine Show at Peoria, Illinois.

Berkshire Sow, Grand Champion at the 1929 National Swine Show at Indianapolis, Indiana.

Chester White Boar, "Defender," Junior Champion at the 1925 Iowa Inter-State Fair.

Chester White Sow, "Miss Imprint," Grand Champion at the 1925 Iowa State Fair.

Budd, now of Henry County, introduced Hampshires into Rush County in 1896. They were bought of Mr. Work just mentioned. One of the sows of this purchase was Belted Beauty, a noted dam of the breed.



Duroc Jersey Boar, "High Wave," Grand Champion at the 1928 National Swine Show at Peoria, Illinois.

Duroc Jersey Sow, Grand Champion at the 1929 National Swine Show at Indianapolis, Indiana.

Yorkshire Breeders—The State Fair premium lists had a separate class for Yorkshires in 1871 and 1872 only. There was only one Indiana winner of this breed in these years, namely, O. P. Cobb and Sons, Aurora.

Hampshire Boar, Grand Champion at the 1929 National Swine Show at Indianapolis, Indiana.

Hampshire Sow, "Jane," First Prize Yearling at the 1925 South Dakota State Fair.

Spotted Poland-China Breeders—Fred L. Obenchain, Indianapolis, Secretary of the National Spotted Poland-China Record, credits William Cunningham, Adam Ader, and Benton Berket, all of Putnam County, with being the pioneers

Poland-China Boar, Grand Champion at the 1930 National Swine Show, Indianapolis, Indiana.

Poland-China Sow, "Arbitress," Grand Champion at the 1925 Iowa Inter-State Fair.

Spotted Poland-China Boar, Grand Champion at the 1929 National Swine Show at Indianapolis, Indiana.

Spotted Poland-China Sow, Grand Champion at the 1929 National Swine Show at Indianapolis, Indiana.

in bringing Spotted Poland-Chinas from Pennsylvania into Indiana about 1884. He further states that Paul Langberger and Wally Gosland of the same county became interested in this breed about 1900. Mrs. Jenny M. Conrad, Morocco, began breeding these hogs about 1885. Probably the earliest advertiser of Spotted Poland-Chinas in the state is W. F. Franklin of Hendricks County, who began breeding them in 1906.

Suffolk Breeders—A. C. Green and Sons, Winchester, were large exhibitors of Suffolk hogs in 1892 and 1893. George Ineichen, Bryant, was another exhibitor in 1893.

Tamworth Boar, "Rosehill Anchor," Grand Champion at the 1924 Illinois State Fair.

Tamworth Sow, "Home Farm Maxine," Grand Champion at the 1924 Illinois State Fair.

Yorkshire Boar, "Ruby's Prince 4th," several times a Grand Champion.

Yorkshire Sow, "Deer Creek Rena 7th," Grand Champion at the 1920 National Swine Show, Peoria, Illinois.

The foregoing lists of early breeders of cattle, horses, sheep, and swine are very incomplete, as the writer has been unable in many cases to learn who were the pioneers in introducing and breeding pure-bred stock. It is hoped that the names given will suggest others who led the van in livestock improvement in Indiana.

CHAPTER XIII.

POULTRY AND POULTRY RAISING IN INDIANA

EARLY TYPE—No farm industry has undergone a greater evolution in Indiana in the last century than poultry raising. Chickens must have come with the early settlers. They were doubtless of mixed breeding, but of the lighter kinds that could fly up into the lower branches of the trees to roost out of the reach of foxes and wolves. The hens chose their nests about the straw stack, in the stables, under bushes, in the fence corners, anywhere that promised "biddy" the desired seclusion. Often the nest was so well hidden that it was not discovered until the mother hen had hatched and brought out her brood.

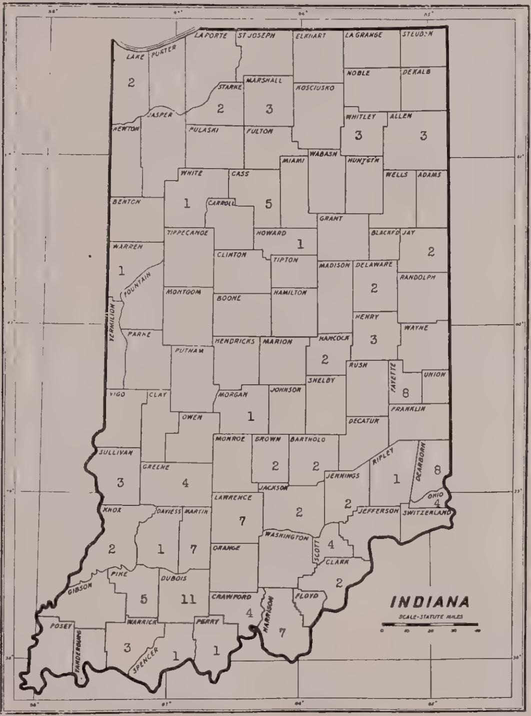
A Household Industry—The setting of the hens and the feeding and care of the flock were generally the concern of the housewife. In the spring time the children became interested for a week or more to see which one could find and hide away the most eggs by Easter. In the early years poultry was raised chiefly for home consumption. Who does not wistfully recall the attractive platter of poached or fried eggs on the dinner table, or the fat roast fowl that, at mealtime, was the center of interest to the hungry children?

Early Date Wanting—Early statistics as to the number of poultry produced in Indiana are not available. In 1880 the number of poultry in the state was nearly eight millions and the number of dozens of eggs produced was over twenty-eight millions.

Increasing Production—In 1920 the poultry numbered more than twice as many as in 1880, and the egg production was nearly three times as great, although the population of Indiana in the same period had increased only about 50 per cent. This means that within this period a market for Indiana poultry and eggs was developing within and outside the state.

Flock Improvement—The increase in poultry production was quite as rapid prior to 1900 as since, and must be attributed to the general improvement of the farm flocks and to the better housing and feeding of the poultry from year to year.

Advent of Pure Breeds—Just when pure breeds of poultry began to appear in Indiana is uncertain. Here and there an enterprising person would bring into the state some fine chickens and sell the progeny at good prices to interested neighbors. An example in point was Mrs. Sarah C. Harrell (deceased) of Brookville, who in 1853, when a ten-year-old girl, received from a Kentucky Colonel a setting of 13 Light Brahma eggs from which 13 chickens were hatched and nearly all raised. Several birds of this hatch were sold at $5.00 a pair. This is supposed to be the earliest introduction of pure bred chickens into Franklin County.



Distribution of Demonstration Farm poultry flocks in 1927-1928. The figures show both the counties and the number of demonstrations in each. The improved methods of these co-operators with Purdue University are reflected in the health, vigor, and profitableness of their flocks. This map shows the number of demonstration flocks in each county. For example, White County had one farm demonstration poultry flock, Cass County five, Fayette County eight, and Dubois County eleven demonstration flocks.—Map made by the Poultry Department of Purdue University.

Poultry at State Fair—Only four breeds of chickens—Shanghai, Poland, Game, and Bantam—and Muscovy and Poland ducks were shown at the first State Fair held at Indianapolis in 1852. According to the 1907-8 report of the State Bureau of Statistics there were then 76 breeds and varieties of chickens and seven breeds of turkeys in addition to the pure breeds of ducks and geese which are not given in this report. In the 1926 Indiana State Fair, 101 varieties of poultry were shown, including chickens, ducks, geese, turkeys, and guineas.

Poultry Fanciers—This rapid increase in the number of pure breeds must be credited largely to the enterprise of the fanciers who introduced and bred new breeds and varieties of poultry chiefly for exhibition at the fairs. With them, however, distinguishing breed and variety characteristics and fancy show points with the necessary vigor were the important considerations, rather than real utility. The questions of performance and cost of production were of minor importance to the poultry fanciers. Birds must show well to win premiums, so style, color, stamina and markings, conforming to the then popular poultry standards, were the important points of the show birds. Thus the breeding of fancy poultry became the highly specialized business of the professional exhibitors who followed the rounds of the fairs, displaying their birds and their laurels won at the shows. But these poultry fanciers were good salesmen as well as successful breeders and exhibitors. Hence specimens of their fine fowls—here a male and there a pair or a trio of birds—found their way into the farm flocks. More recently the introduction of pure-bred poultry has been accelerated by the shipment of eggs for hatching and by the chick output of commercial hatcheries.

Pure-bred Flocks—Little by little the common poultry stock began to give way before the advance of the pure-bred fowls. In consequence the State is now well dotted with pure-bred flocks of poultry, chiefly of the laying strains.

Egg Producing Poultry—The recent growing interest in pure bred poultry, mainly for egg production, was reflected in the new classification for "Farmers' utility flocks" in the 1922 premium list of the Indiana State Fair. First, second, third and fourth premiums were offered in each of the following poultry classes: American, Asiatic, Mediterranean and English. The wise provision was made that the poultry shown in these four classes must be of sufficient age to establish their qualities as producers.

Era of Improvement—The era of widespread poultry improvement in Indiana really began some years after the establishment of the Agricultural Experiment Station. In this work of general poultry improvement the experiment station has led the way, but much credit is due to the loyal following of many poultrymen in the state.

Means of Improvement—The several means of improvement employed included: (1) breeding from selected stock, (2) culling of flocks, (3) housing, (4) feeding, (5) demonstration farms to show good flock management and sanitation, (6) disease control.

A farm flock culling demonstration in Indiana. During the last decade thousands of Indiana farmers have culled their flocks, thereby effecting a large saving in feed, and increasing the profitableness of their flocks.

Better Breeding—The improvement by breeding was effected by selecting the eggs of heavy egg-laying hens, discovered by resort to trap-nesting, which were mated with males from high egg-producing ancestors.

Poultry Culling—By poultry culling, introduced in Indiana in 1918 by the Poultry Department of Purdue University, many thousands of low-producing or "boarder" hens have been eliminated. Sometimes as much as thirty per cent of the farm flocks has thus been discarded and sold for meat. Poultry culling demonstrations are now conducted by many of the county agents, and this method of flock improvement is being generally employed by the leading poultrymen.

Poultry Housing—Beginning about 1920, much improvement has been effected in the housing of poultry, due largely to the work of the poultry specialists sent out from Purdue. In response to requests for information, suggestions are sent out that may be applied in remodeling poultry houses or in erecting new buildings on approved plans and construction methods, with blue prints showing details.

Poultry Feeding—Experiments conducted at Purdue and elsewhere show the very great importance of proper feeding of poultry. Well-bred hens receiving a good grain ration, but without a protein concentrate, averaged annually 50 to 60 eggs per hen. The same grade of hens when receiving, in addition to grain, tankage or meat scraps or milk, increased their average production to 150 or 160 eggs per year. The protein concentrate also reduced the feed cost about one-half. By these feeding experiments, which are being conducted from year to year, and the publication of results, the Poultry Department is doubtless rendering as large a service to the poultrymen of the state as in any other way.

Poultry Demonstration Flocks—The information on poultry problems, sent out broadcast over the state in bulletins and circulars from Purdue, supplemented by the farm and local papers and by addresses at Farmers' Institutes, Farmers' Short Courses, and at special poultry meetings, has been illustrated and emphasized by poultry demonstration farms, conducted by wide-awake poultrymen under the direction of the Poultry Department of Purdue. These demonstration farms, which were started in 1915, numbered 265 in 1926 and were located in 41 counties. Chiefly because of better feeding, these demonstration farms have doubled the egg production of the average farm flocks of the state, and they carry convincing object lessons to the interested near-by farmers.

Artificial Incubation—Artificial incubators were under trial in the United States as early as 1880 but probably did not come into use in Indiana until about 1895. The early forms were of small size, 50 to 100 egg-capacity, and were kept at hatching temperature by a kerosene lamp. When the success of the small incubators was assured, the demand for them steadily grew. This led the manufacturers to build more, and of larger and still larger size until, by 1918, incubators with egg capacity running into the thousands were being made and used in Indiana.

Commercial Hatching — When the practicability of shipping day-old chicks long distances by mail was finally demonstrated about 1920, artificial hatching began to develop rapidly. Shipping baby chicks by mail is now (1928) a very considerable feature of the poultry business in Indiana and the chief means of rapidly increasing the already widespread distribution of the more popular breeds of poultry.

A Poultry House in Clark County, Indiana, built to secure ventilation, dryness, light, convenience, ease of disinfection, and economy of construction. Thousands of such poultry houses have been built in Indiana.—Courtesy of Professor Carrick, Purdue University.

Disease Control — Although poultry diseases and pests have become more prevalent in recent years, the experiments and investigations of the veterinarian and entomologist have discovered and applied adequate methods of control. Poultrymen in increasing numbers are seeking the advice of these investigators and, by so doing, are enabled to prevent, stamp out or control such diseases as avian tuberculosis, bacillary white diarrhea, and the various insect pests, including the recently introduced feather mite. Hence poultrymen who regularly employ the proper preventive and sanitary measures can maintain the health and vigor of their flocks. In cases of the introduction of disease through infected eggs or birds the prompt adoption of the measures recommended by the experiment station have prevented or greatly reduced the heavy losses which uncontrolled diseases have caused in numerous instances.

Artificial Lighting—Another recent phase of the poultry industry in Indiana is the use of artificial light to lengthen the short winter days and thus secure greater egg production when prices are high. The tests made at the experiment station show that, by means of electric light, a working day of twelve to fourteen hours can be secured, which under favorable conditions will result in egg production approaching that of the summer months.

Sunshine and Cod-liver Oil—The growing recognition of the importance of direct sunshine in poultry raising is shown in modern poultry house construction which provides for the fullest possible admission and control of the direct rays of the sun. Investigations have shown that direct sunshine is of the utmost importance as a sanitary agent and especially in the development of young chicks. In studies conducted by the experiment stations, it has been found that young chicks under the direct rays of the sun for a few hours daily not only develop greater vigor but are also free from rickets, which is a common ailment of chicks reared in confinement. Experiments have also shown that pure cod-liver oil administered in the chick ration is an effective substitute for sunshine in preventing rickets. As this preventive is expensive, good poultry managers take care to utilize all the direct sunshine possible.

Poultry Progress—With the accumulating experience of years, the rapid evolution of poultry equipment and appliances, and the flood of light thrown on poultry problems by the experiment stations, the element of so-called luck or chance in poultry raising has been largely eliminated. Hence, in the last half century, poultry raising in Indiana has developed from a household side-line into an important asset of the farm, an independent lucrative vocation for both men and women, a profitable commercial business for many, and a very considerable source of revenue to the State.

Poultry Pioneers—Of the pioneer breeders of standard-bred poultry in Indiana, Frank P. Johnson of Marion County claims to be the oldest one living. In 1858 Mr. Johnson received a trio of Shanghai chickens from his grandfather, Powell Howland, who moved from New York to Indiana in 1839. About 1855 Mr. Howland brought from his former home a flock of Shanghais from which Mr. Johnson got his start in poultry breeding. A few years later Mr. Johnson took up Buff Cochins and, in 1865, he began breeding Light Brahmas from foundation stock obtained from Westboro, Massachusetts. He still retains the old blood. He began showing in 1869 at the Indiana State Fair and has been a constant exhibitor ever since. He also claims to be the oldest living poultry exhibitor at the State Fair. His claim thus far has not been contested. Although Mr. Johnson now (1927) is 77 years old, his handwriting is smooth, legible and modern, giving evidence of a green old age and a youthful spirit.

The following is a list, doubtless incomplete, of other pioneer poultry breeders which Mr. Johnson has kindly furnished from memory:

Bantam: R. A. McKinney.

Brahma: Light, Mrs. Danley, Mr. Painter, B. N. Pierce, C. A. Snyder, N. E. Wood.

Cochin: Buff, Wm. T. Christian, B. F. Hill, Charles Ward; Partridge, W. H. Fry, Samuel Naftsger.

Langshan: Black, Ben S. Myers, C. A. Snyder; White, Thomas Campbell.

Leghorn: Brown, Ed. B. Murphy; Buff, Samuel Lynn; White, Albert Lieber, William Tobin.

Orpington: Black, C. A. Byers; Buff, C. S. Byers, A. B. Carter, Charles Millhouse; White, C. S. Byers.

Plymouth Rock: Barred, Sid Conger, H. G. C. Balls, Mrs. Anna L. Day, George Muck; Buff, A. L. Wickler; White, Preston Condit, U. R. Fishel.

Polish: Theo. Hewes.

Rhode Island Red: B. F. Hill.

Spanish: Black, Thomas Pottage, Theo. Hewes.

Wyandotte: White, J. C. Fishel.

Several breeds: Frank Hasselman, Dr. Haas, I. N. Barker, W. C. Britton,

The counties, represented by these early poultry breeders and the number in each, are as follows: Marion, seventeen; Montgomery, four; Bartholomew, three; Boone, Hendricks and Henry, two each; Hamilton, Johnson, Putnam, and Wabash, one each.

There are now hundreds of successful poultry breeders in the state, some of them very prominent, but mention is made of only the above-named persons because they are reported to be the pioneers. They took the initiative, incurred the risk, developed the business, and paved the way for others to follow.

Chapter XIV.

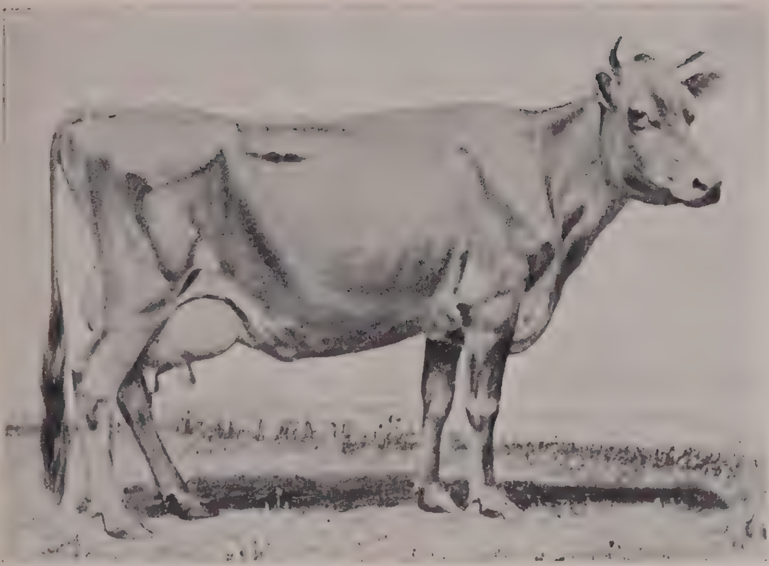
FARM DAIRYING IN INDIANA

THE FAMILY COW—The family cow came with the early settler. She was a prime necessity from the start. That she could subsist most of the year on the scanty herbage of the forest, live through the winter on straw, corn-fodder, and a little ear corn, produce a calf every spring, supply milk for the family and sometimes also a little butter, is evidence of her hardiness and usefulness.

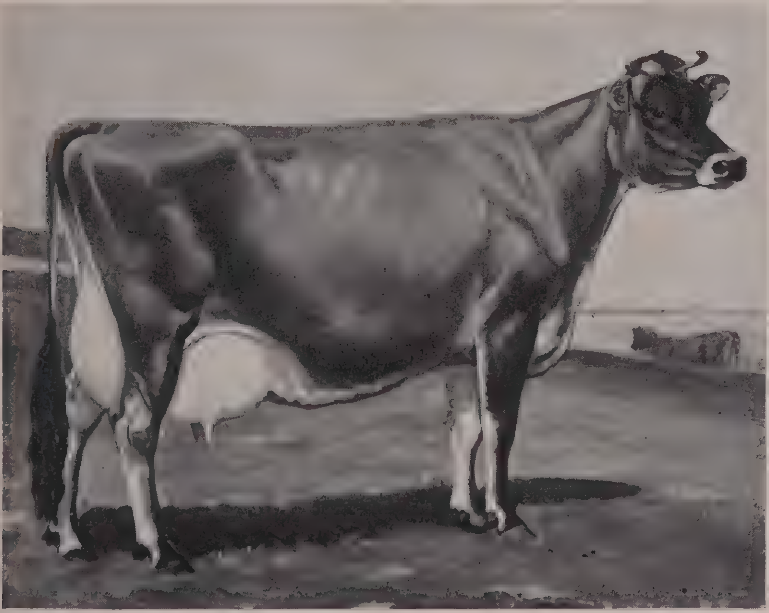
Her Hard Experience—That she endured the cruelty of the treatment for hollow-horn, having her horns bored into with a gimlet and her tail split open at the switch and salt put in the incision, when her major trouble was a hollow "insides", and lived often unsheltered through the winter, sometimes with snow frozen on her pinched back, is a wonder. That under such rigors she sometimes succumbed, when her hide went to the tanner and her carcass to the boneyard, is no fairy tale and no wonder at all. But the cow was not alone in her hard experience. As we recall the hardships, privations, and real suffering of both man and beast in those early pioneer days, we are glad that they are gone forever in Indiana.

Early Cow a Mongrel—Prior to 1840 and even as late as 1850 in Indiana most of the cows must have been of so-called native stock. There was, however, a growing admixture of the blood of grade Shorthorn and Devon cattle, the two breeds first brought into the state. At the first State Fair, held at Indianapolis in 1852, there was, strangely enough, a class for "Herefords and Ayrshires". A single award was made in this class to Matthew R. Hull of Fayette County on a bull, presumably an Ayrshire, as there were probably no Herefords in the State at that time. This so-called dairy class was omitted from the 1853 and subsequent premium lists of the State Fair until 1864 when it reappeared.

Advent of Dairy Breeds—Beginning in 1866, Alderney and Ayrshire cattle were shown quite regularly at the State Fairs by Indiana exhibitors. Jersey cattle appear to have been first shown at the Indiana State Fair in 1878, Holstein-Friesians in 1884, and Guernseys in 1894. From about 1895 for-



An early type of Jersey cow as found in Indiana about 50 years ago. Illustrations of early and recent types of Jersey and Holstein cows furnished by the Dairy Department of Purdue University.



A modern type of Jersey cow which is becoming increasingly prevalent in Indiana pure bred Jersey herds.

ward, entries by Indiana exhibitors of Jerseys and Holsteins steadily increased, while Guernseys were shown intermittently in slowly increasing numbers from Indiana. In this same period the Indiana exhibits of Alderney and Ayrshire cattle became fewer and finally ceased.

Red Polled and Brown Swiss cattle were first exhibited at the State Fairs in 1890 and 1896 respectively. Both are often classed with the dairy breeds by some authorities, but Professor Plumb regards them as essentially dual-purpose cattle.[1] There were classes for "Milch cows" in the State Fair premium lists beginning in 1852 and continuing until 1865 when this classification gave way to the class for "Dairy breeds" of cattle.

Dairy Products Exhibited—Farm butter and cheese were regularly exhibited at the State Fairs from the start in 1852. Creamery butter appears to have been first shown at the State Fair of 1897, but factory butter and cheese were made in Indiana in 1880 and doubtless earlier.

Increase of Dairy Cows—The proportion of dairy cows in Indiana increased between 1870 and 1924 from 38% to 49% of all the cattle in the state. The average annual milk production per cow since 1890 has increased from 346 to 481.2 gallons, or 39%.

Volume of Dairy Products—Nearly 23 million pounds of butter were made on Indiana farms in 1870. Farm butter production reached its crest of over 51 million pounds in 1900 and declined to 12 million pounds in 1924. The butter made in Indiana factories increased from 281,000 pounds in 1880 to over 51 million pounds in 1924. Until quite recently cheese making has not been a large industry in Indiana and the fluctuations in cheese production have been considerable. In 1870 the farm production was nearly 284,000 pounds. More than 367,000 pounds were produced in 1880. The lowest production was over 63,000 pounds in 1910. In 1920 it was 109,000 pounds. The factory production of cheese was over one million pounds in 1880 and in 1900, but not quite 374,000 pounds in 1924. Recently factory cheese making in Indiana has undergone rapid development, the output being 710,365 pounds in 1927 and 4,294,482 pounds in 1928.

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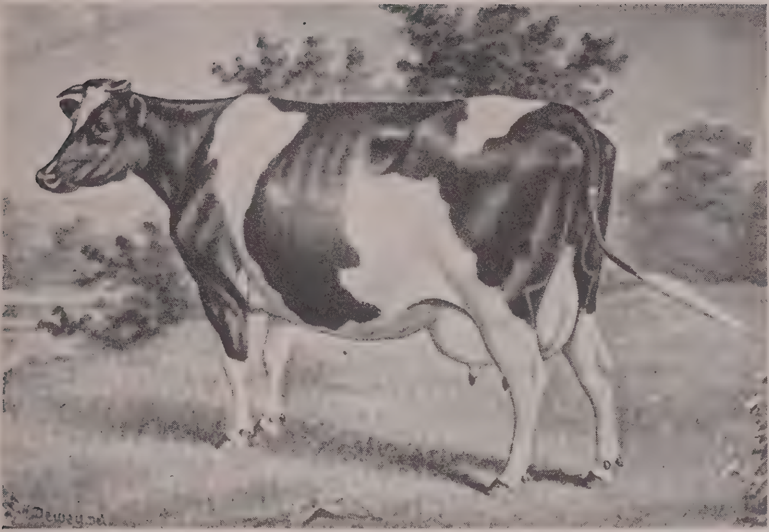
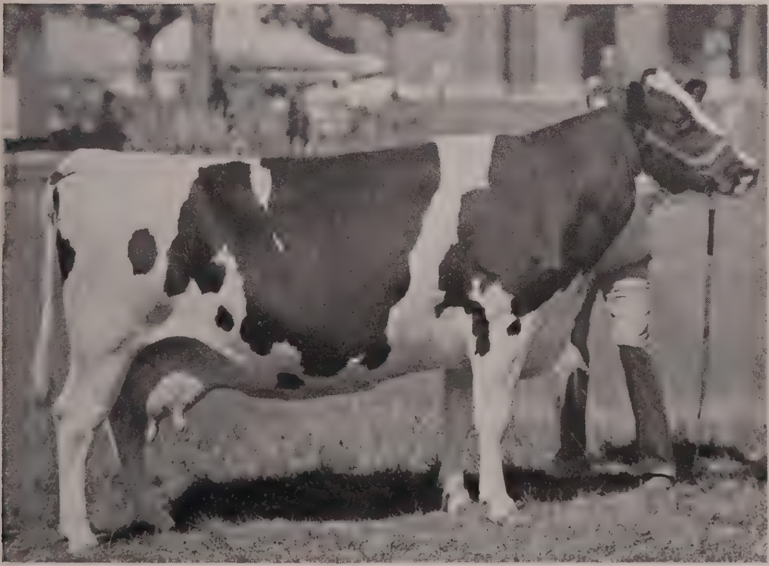
[1] "Types and Breeds of Farm Animals," Rev. Ed., pp. 453, 464.



An early type of Holstein-Friesian cow representing the breed as found in Indiana about 1880.



Type of pure bred Holstein-Friesian cow which Indiana breeders are now seeking to produce with increasing success.

Experience with Early Creameries—The dairy interest in Indiana received a severe blow from a boom in building and outfitting creameries which was at its crest in 1891. The following facts concerning the creamery situation in Indiana in the nineties, are gleaned from a report presented by Professor C. S. Plumb at the annual meeting of the State Dairy Association in 1897. Professor Plumb, who was then Director of the Indiana Agricultural Experiment Station, had sent out a questionnaire to all the creameries supposed then to be operating in the state. Replies were received from 104 creameries. Of these 57 were operating in 1896 and 47 were closed. A traveling man, for a dairy supply house, claimed to know that at least 285 creameries had been erected in the state. The small number of replies to Professor Plumb's questionnaire indicates that the percentage mortality of these creameries was very great. Through the glowing representations of creamery promoters, farmers in many parts of the state invested and lost many thousands of dollars in proposed cooperative creamery plants. Most of these plants were too large for the supply of milk. In one case the farmers were induced to invest in a $5,000 plant in a community where only corn, hogs, and beef cattle were produced. In most cases, neither the farmers nor the cows were trained for or adapted to the dairy business. The two main causes of the many failures were mismanagement and lack of milk. Under such conditions, failure in many cases was a foregone conclusion. Of the creameries reported on, two-thirds of those built in the southern third of the state failed. In the nineties these abandoned creameries were a depressing sight. In northern Indiana, where many more creameries were built, a larger percentage managed to keep going, and some prospered. Professor Plumb states that creamery agents proposed to furnish the experience and the farmers were to put up the money. The result was that the farmers got the experience and the promoters got the money. Out of this unfortunate experience an unjust prejudice was developed against the whole dairy business, which has required years of later education to overcome.[1]

Dairy Progress—The dairy industry progressed slowly in Indiana prior to 1890. Some time after the establishment of the Experiment Station in 1887 and the organization of the State Dairymen's Association in 1891, systematic dairy instruction and the improvement of the dairy cow began; but most of the actual dairy progress in Indiana has been made in the present century.

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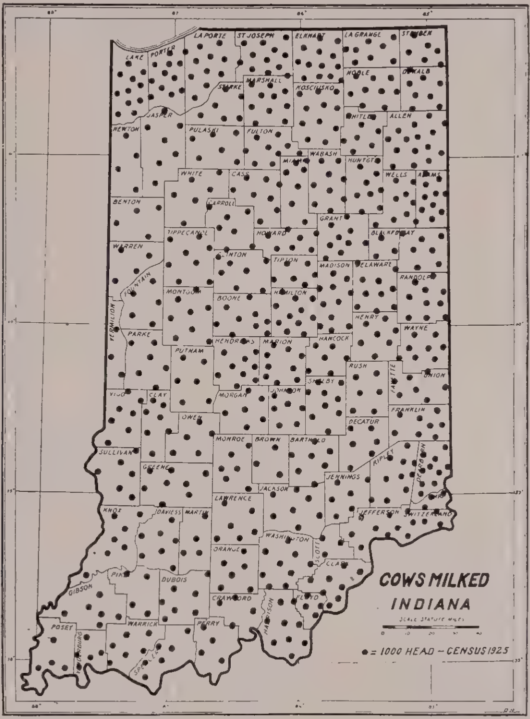
[1] An interesting series of articles on "Indiana's Dairy History," by John L. Richardson, has appeared in Nos. 2, 3, 24, 25, and 27, of the "Farmer's Guide" for 1927.



This map shows graphically the very even distribution throughout the state of cows that were milked in 1924, according to the state census of 1925.—Map made by the Department of Agricultural Statistics of the Experiment Station.

Factors of Progress—The important factors contributing to the advancement of dairying in the state are: The Babcock test for fat in milk; daily milk records; cow-testing associations; better dairy sires; "Dairy Special" trains; balanced and heavier feeding rations for cows when giving milk; better housing, rearing, and management of dairy stock; investigation of dairy problems by the Experiment Station; field demonstrations by the dairy specialists of Purdue; the widespread dissemination of information through agricultural papers, circular and bulletins of the Department of Agricultural Extension; addresses at Farmers' Institutes, Farmers' Short Courses, and special meetings of dairymen.

Babcock Test in Indiana—The Babcock test for fat in milk and cream which came into public notice in 1890 was brought into general use in Indiana about 1900. Imperfections in the test bottles then in use caused apparent variations in the percentage of butter fat, and this led to complaints, often unjust, of dishonesty on the part of the milk testers.

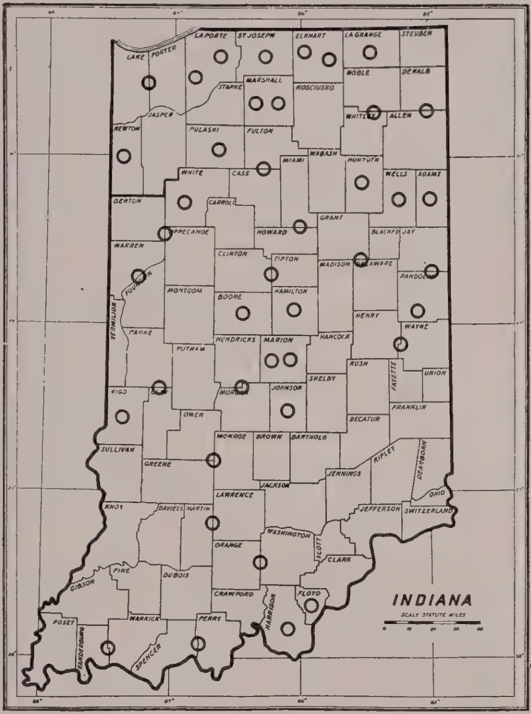
Purdue Leads—In 1908 the Dairy Department of Purdue University, then in charge of Professor O. F. Hunziker, rendered a substantial service to the dairy interests of the country by inaugurating the movement which, a few years later, resulted in standardizing the glassware used in the dairy laboratories of the country.

Glymol Test—In 1910 Mr. George Spitzer, dairy chemist of Purdue, discovered the "glymol test", which removes the meniscus (curvature at the surface of the butterfat) in the test bottle, and makes possible accurate reading of the percentage of fat in cream and milk. This discovery as well as the standardized glassware is now generally utilized by dairy producers and manufacturers and has contributed much to dairy progress in general.

Milk Records—Near the close of the last century enterprising dairymen in Denmark began weighing the daily milk yield of individual cows, which led to the discovery and elimination of the "boarder" cows. This was soon followed by the forming of cow-testing associations, which were first organized in Denmark in 1895. Germany, Sweden, Norway, and the United States followed in the order named.

Cow-testing in Indiana—Cow-testing Associations were first organized in Indiana in 1913 under the supervision of the Dairy Department of Purdue University. The work of forming these associations has progressed slowly until quite recently. At the present time (1927) there are in the state thirty-three cow-testing associations whose aggregate membership of about 825 is distributed over fifty-four counties. These associations are effecting a marked improvement in the herds of the members through the elimination of unprofitable, low-producing cows which were discovered by the test. These associations have also stimulated interest and improvement in the methods of many other dairymen of the state.

Better Sires—Before the opening of the present century, the Dairy Department of Purdue began emphasizing the importance of better sires in improving the dairy herds of the state. Improvement through the use of sires of high-producing families has been amply demonstrated with both Holstein-Friesians and Jerseys in the Purdue dairy herd. The exchange among dairymen of proven sires has doubled their period of usefulness and made more certain dairy herd improvement. These cow-testing associations have made it possible for their members, by joint purchase, to secure high-class bulls; and by exchanges among the members they may retain, throughout the full period of their usefulness, the getters of the best heifers. This practice is already contributing much to dairy herd improvement.



This map shows the number and distribution of the dairy herd improvement associations that were in operation January 1, 1929. The circles also indicate approximately the location of the association headquarters in each case.—Map made by the Dairy Department of Purdue University.

Railway Cooperation—In furthering the rapid spread of dairy information in the state, the Dairy Department of Purdue has had the active and valuable cooperation of the B. & O.

railroad in southern Indiana, the Erie railroad in northern Indiana, and several of the traction lines in the state. Beginning in 1913, the Dairy Department has run at intervals of one or more years, a number of "Dairy Specials", the specific purpose being to emphasize better breeding and feeding of dairy cattle. This spectacular method of giving extension instructions has been a potent means of arresting attention; and, in consequence, thousands of dairymen and others have been quickly reached and instructed in improved dairy methods.

This picture shows the ensiloing of corn on the farm of Andrew Johnson, Mulberry, Indiana. The square form, inside silo and the round stave silo appeared in Indiana in the late eighties of last century. The cement stave, solid cement, and vitrified hollow tile silos are now found on most of the beef cattle and dairy farms of the State.—Photo by J. C. Allen & Son.

Better Feeding — For more than a quarter of a century, the Purdue Dairy Extension Division has been advocating the better feeding of dairy stock, based on elaborate and repeated experiments in feeding dairy cattle, especially heifer calves and milk cows. The economy and profitableness of the heavy feeding of balanced rations to milk cows according to the flow of milk, have been thoroughly demonstrated in the feeding experiments conducted by the Indiana and other experiment stations. The gospel of better feeding has been carried through bulletins, the press, and the dairy extension specialists of Purdue to all parts of the state. Good feeding methods are now generally followed by the leading dairymen, and there is a forward movement among the rank and file of dairy farmers, but much remains to be done before the highest results can be obtained.

Better Housing — Since about 1900, attention has been directed toward the improvement of dairy barns to secure economy of labor, the comfort of dairy herd, and more sanitary conditions in general. There is in the state a steadily-growing number of good dairy barns that are comfortable, well lighted, and ventilated, making possible the full utilization of the food and the complete saving of the manure. There are, however, hundreds of dairy barns that are dark, poorly ventilated, unsanitary, inconvenient to work in, and uncomfortable for both man and beast. A recent survey of the dairies in one of the older counties of Indiana shows great and general need of improvement in the dairy barns and stables, in feeding rations, and in farm and herd management, to secure the best returns.

Jamesway Metal Barn — A new type of one-story metal barn with separate metal silo and self-ventilating hay storage has been designed and built by the James Manufacturing Company of Fort Atkinson, Wisconsin. The silo and hay storage may be two separate structures, or they may be combined in one. In the latter case the silo forms the inner part or core, surrounded by an inner and an outer perforated circular wall between which the partially cured chopped hay is stored. There is an air space between the silo wall and the inner hay storage wall so that the mow has both inside and outside ventilation. The space for hay storage between the two perforated walls—would need to be narrow enough to insure the proper curing of the partially dried chopped hay which is blown into the top of the mow.

The following improvements are claimed for these metal farm structures: (1) curing time shortened several hours; (2) more of the leaves are retained; (3) more color, flavor, and odor preserved; (4) more of the proteins and vitamins retained; (5) shortens time of storing; (6) mowing away of hay eliminated; (7) takes less time and effort to feed out; (8) feed relished and eaten with less waste; (9) barn fires curbed; (10) insurance costs reduced.

Advanced Registry—Under the incentives of the dairy record associations the enterprising dairymen of Indiana are contributing their share of cows eligible for advanced registry. This example of the few, by showing the possibilities in dairy production, is encouraging a general forward movement by the dairymen of Indiana.

This picture gives an interior view of the dairy barn of Barty Brothers, Valparaiso, Indiana. The Guernsey cows are milked with a DeLaval electric milking machine. Dairy barns similar to the one shown above are being built or remodeled in Indiana to secure greater convenience, better lighting and ventilation, more sanitary conditions, and greater comfort of the cows.—Photo by J. C. Allen & Son.

Purdue Dairy Publications—Some of the most important publications of the Dairy Department of Purdue University which are contributing to dairy advancement are on "the estimation of fat in unsweetened condensed milk", "testing cream for butterfat", "moisture control of butter", and "pasteurization of sour cream for butter making".

Cream Testers' License Law—The Dairy Department of Purdue was influential in securing the enactment, in 1913, of the Creamery License Law. The administration of this law and the examination of candidates for license as required by the law, have been entrusted to Purdue University. Thus duly qualified testers are licensed for service in creameries, at cream and milk gathering stations, and in farm dairies.

This picture shows the hay-drying unit of the Mason Alfalfa Products Company of Philadelphia which was first used in Illinois in 1922. It has been successfully used commercially on large farms in Illinois, Delaware, New Jersey, and Texas. Its capacity to convert green alfalfa into cured hay or meal is two tons per hour. The entire plant includes the mowing, loading, and hauling of the green products to the drying unit. The curing and grinding into meal are effected in 60 minutes from the field. The mechanical curing of hay in Indiana, by means of hot air, is yet in its experimental stage.—Courtesy Mason Alfalfa Products Co.

Inspection of Dairies—Since about 1906 all dairies, especially those which supply city milk, have been subject to inspection. The state law requires that milk for city consumption must contain 3.25 per cent butterfat. Some cities require a still higher fat content. The requirements as to sanitation, health of the cows, and care of the milk, are growing increasingly strict. In consequence, the dairy barns are becoming more sanitary and the dairy herds more healthy. All the operations of the dairies are being conducted with greater care and cleanliness, and the dairy products are steadily improving in quality.

Tuberculosis Eradication — In the earlier years, tuberculosis of cattle was prevalent in Indiana as elsewhere. About the opening of the present century, when the seriousness of this disease which not only levied heavy toll of some dairy herds but was also a menace to human beings, began to be recognized, steps were taken to stamp it out. Tuberculin-testing began about 1896 in Indiana. Progress in tuberculosis eradication was slow and difficult at first, because of the heavy losses due to the destruction of condemned animals. However, as public sentiment began to demand of the dairies a clean bill of health, the work of eliminating infected cows proceeded more rapidly. Within the past decade most encouraging progress has been made in tuberculosis eradication, in disease prevention, and in dairy sanitation. At the close of 1926 about one-fourth of the counties were practically free from bovine tuberculosis, and the work of eradication is going forward rapidly under federal and state auspices.

Dairy Standardization — There is a steady forward movement toward the standardization of all phases of the dairy industry in Indiana, including the breeding, feeding, housing, and management of the dairy herd, the care and handling of milk and cream, and the shipment of dairy products to manufacturing plants and consuming centers.

Conditions of Dairy Progress — Although there is still large room for further improvement in many farm dairies of Indiana, the present attitude of dairymen is one of open-mindedness; and advancement though slow, is steady and general. With the favoring conditions for successful dairying in Indiana, the widespread dissemination of the knowledge of both the practical and scientific phases of dairying, the rapid development of labor saving and sanitary dairy machinery and appliances, the increasing use of the best methods in dairy production, the growing appreciation of the value of milk in human nutrition and the enlarging role of dairy products in the diet, the growth of manufacturing establishments which utilize large quantities of cream and milk, and the expanding market for the products of the dairy, all the conditions are present for the continued progress and prosperity of the dairy industry in Indiana. Although the dairy business is a rather confining one, requiring constant attention to many details to insure success, the dairymen of Indiana may take courage and find inspiration in knowing that they are satisfying normal and abiding human needs, maintaining unimpaired and often greatly enriching, their broad acres for the service of coming generations.

CHAPTER XV.

HORTICULTURAL DEVELOPMENT IN INDIANA

THE TERM horticulture as here used includes the growing of edible fruits and vegetables. Just how early the cultivation of fruits and vegetables began in Indiana is not certain.

Early Accounts—Travelers[1] from Europe and the Eastern United States in the first quarter of the nineteenth century and even earlier, mentioned the abundance and general distribution of wild fruits within the bounds of Indiana. This wild fruit must have been at least an occasional luxury on the tables of the first settlers, but fruit did not appear on the early published bills of fare. Vegetables must have been more commonly eaten, as many kinds were said to have been grown. The gardens of the early French settlers at Vincennes received special mention. However, vegetables were seldom mentioned as forming a part of the meal. Vincennes was the market for the vegetables grown by the Shakers and had two market houses in 1818; but Irish potatoes were the only vegetable product that appeared in a Vincennes market list of that period.

In one locality in southern Indiana peach trees were said to have borne fruit in two or three years from the planting of the seed. This statement found verification many years later in a Lawrence County peach orchard which produced over 5,000 bushels of fruit the third summer. Although fruits were not mentioned by early travelers as market commodities, peach brandy and grape wine were marketed.

Seeds Brought by Early Settlers—The early settlers undoubtedly brought with them both fruit and vegetable seeds and plants. Soon after their arrival the products of the garden and, later, those of the orchard must have helped to give variety to the prevailing corn-bread-and-meat diet.

Johnny Appleseed—Late in the first half of the last century John Chapman, that eccentric but benevolent New England character known as "Johnny Appleseed", made his contribution to Indiana horticulture by planting apple seeds for the starting of orchards in the vicinity of Fort Wayne. For these pioneer plantings Mr. Chapman is held in grateful remembrance . In 1916 a granite boulder, duly inscribed, was placed in Swinney Park, Fort Wayne, to perpetuate the memory of Mr. Chapman. Seedling fruits were the rule in Indiana at first, but the Shaker settlement, about fifteen miles north of Vincennes, was said to have had a fine young orchard of grafted apples and the best nursery in the country in 1816.[1]

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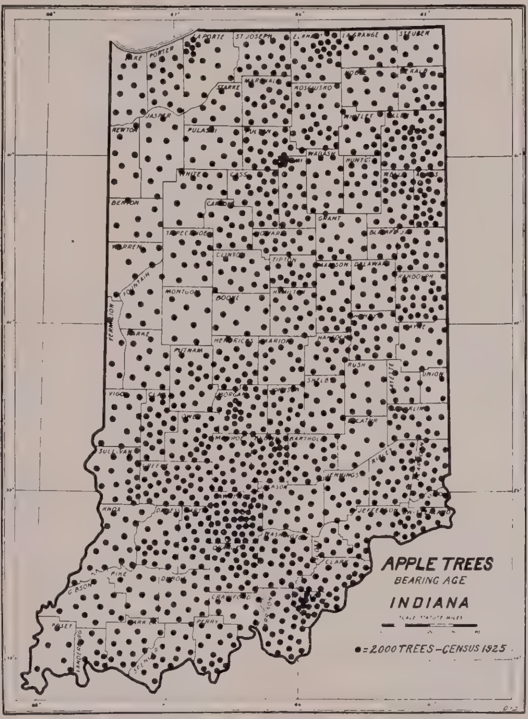
[1] "Indiana as Seen by Early Travelers," several accounts.



This map shows the number and distribution of apple trees of bearing age in Indiana in 1924, based on the State Census, January 1, 1925.

Pioneer Nurseries—Other leading pioneer nurseries[2] of which the writer has learned were the following: In 1812 Dr. Benjamin Albertson settled near Salem, Indiana, and soon thereafter started a small nursery which was enlarged by his son, Oliver. This was said to have been for many years the largest nursery in the state. In 1875 Mr. Albertson moved his nursery to Bridgeport where the late C. M. Hobbs joined him in the nursery business which is now carried on by the sons of

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[1] "Indiana as Seen by Early Travelers," p. 72.
[2] Indiana Horticultural Report for 1872, pp. 114-121.

Mr. Hobbs. This is doubtless the only example of a nursery in Indiana with a continuous existence of more than a century. In 1816, Reuben Brunson became associated with John and Thomas Wallace of Wayne County, Indiana, in the nursery business. About 1830 Mr. Brunson moved to St. Joseph County and started a nursery near South Bend. In 1817 or 1818, Andrew Hampton established a nursery in Wayne County. In 1819 or 1820, James Sigerson came to Hendricks County and a little later started a nursery and began propagating apples, pears, plums, cherries, and grapes with which he supplied a large portion of the state. In 1823 Christopher Harrison of Salem announced in the Indiana Farmer, then in the first or second year of its existence in that town, that he had for sale "Several thousand young apple trees consisting of seedlings and a great variety of grafted and budded fruits of very choice quality." This nursery must have been started about 1820. About 1822, Cornelius Ratliff of Richmond, Indiana, embarked in the nursery business. He informs us in the report mentioned that, some years earlier, Solomon Horney brought the Never Fail (Rawles Janet), John Morrow the Horse apple, and James Pegg the Limbertwig from Guilford County, North Carolina, and that these three were "the first grafted trees ever grown in this vicinity." In 1824, Levi Cook started a nursery in Henry County which he carried on "for about thirty years, keeping on hand from ten thousand to twenty-five thousand apple trees, some pear, and a few cherries". In 1824, Reuben Ragan, a native of Virginia who had moved into Putnam County, Indiana, the year before, started near Greencastle a small nursery which was later enlarged, in which he propagated the leading varieties of apples, cherries, peaches, pears, plums, and quinces of that period. Mr. Ragan sold his nursery stock in 1851, but was an active and influential member of the State Horticultural Society in its earlier years. In 1825, Edward Noogan started a small nursery in Parke County in which he propagated the most commonly grown apples, pears, and cherries of that time. The first nursery in LaPorte County was started in 1831 and the first commercial orchard in 1861. Mr. John W. Violett, who settled in Elkhart County in 1829, started a nursery, probably in the thirties, and conducted an extensive nursery business for a number of years.

Early Grape Growing — In the first decade of last century, at Vevay, the Swiss Colony led by John J. DuFour[1] and a few years later, at New Harmony, the Rappites started extensive vineyards for the commercial production of wine. These vineyards were highly spoken of by early travelers and the one at Vevay was said to be the largest in the country at that time. As stated in a previous chapter, the early French settlers at Vincennes, in Floyd County, and doubtless near Lafayette and possibly elsewhere in the state, were said to be successful vineyardists.

Early Horticultural Progress — The pioneer nurseries furnished the fruit trees for the early orchards which became increasingly numerous in the second quarter of last century. These orchards were small and received indifferent care but, as the soil was fertile and orchard pests were then not numerous, good fruit was produced in quantity sufficient to meet the home needs, satisfy the wants of the later-arriving immigrants, and supply the small but growing inland towns.

Progress Limited — There were doubtless no strictly commercial orchards in the state prior to the Civil War, because until then there was practically no inducement to engage in fruit production on a large scale, as there were no large home markets and river transportation to distant markets was slow, arduous, and attended with much risk to perishable products. However, apples and canned fruit were sometimes flatboated from Ohio River points in Indiana to southern river towns, and immense quantities of potatoes were thus floated to southern markets as late as the early nineties of last century.

Horticultural Awakening — In the early forties of last century an increasing interest in fruits and flowers was slowly awakening in Indiana. The doctors were emphasizing the hygienic value of fruits and vegetables in the diet. Others were advocating the planting of flowers and shrubs for home adornment.

Indiana Horticultural Society — The interest of horticulturists resulted in the organization in 1842 of the Indiana

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[1] For an interesting account of this colony see Bailey's "Evolution of Our Native Fruits," pp. 33-42.

Horticultural Society,[1] said to be the first of its kind in the West. This movement showed much enterprise, as organization for the promotion of horticulture was then a comparatively "new thing under the sun". The first horticultural society was founded in London in 1808, and the first in the United States was the New York Horticultural Society organized in 1818 but now extinct.[2]

Early Horticultural Leaders—The men who were prominent in organizing the Indiana Horticultural Society were: Henry Ward Beecher who was the pastor of a church in Indianapolis and editor of the Indiana Farmer and Gardner, James Colburn, Aaron Aldridge, Captain James Sigerson, David V. Culley, Reuben Ragan, Stephen Hampton, Cornelius Ratliff, Joshua Lindley, and Abner Pope.[3]

First Fruit Exhibit—Probably the first exhibit of horticultural products in Indiana was held under the auspices of this society in the new State House at Indianapolis in the autumn of 1842. The fact that the only premium awarded at that exhibit was a set of silver teaspoons for the best seedling apple (shown by Reuben Ragen of Putnam County), indicates the interest in developing new varieties adapted to the climate of Indiana. Much encouragement was given by the society to the introduction of new varieties of fruit, especially pears, which did well until the pear blight appeared.

Short Career of Society—Although prospering for a time, the new society was short-lived. The coming of the orchard pests and the severe winters, the poor home markets and the inaccessible distant markets, the difficulty experienced and the loss of time involved in holding the meetings because of limited and slow transportation facilities, proved too great obstacles to overcome. So after a struggle of about five years, and the removal of Mr. Beecher, its leading spirit, to New York, the society succumbed—to be resurrected, however, in 1860 under another name.

Progress in the Fifties—The enactment in 1851 of the law providing for the organization and partial financing of the State Board of Agriculture, for county and district agricultural societies, and for holding agricultural fairs, greatly stimulated interest in horticulture as well as in agriculture. The annual meetings of the State Board of Agriculture were attended by leading horticulturists, as there was provision for the discussion of horticultural subjects as well as for those relating to agriculture. Liberal encouragement was also given in the way of premiums for horticultural exhibits at the State Fairs.

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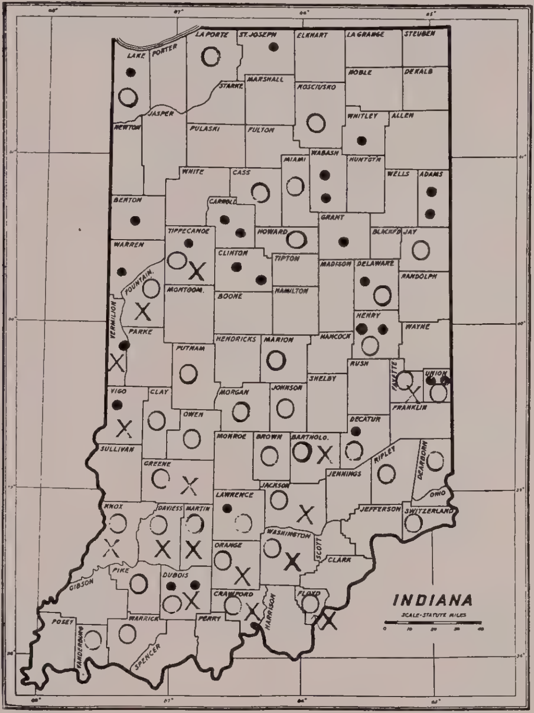
[1] Report of the Indiana Horticultural Society for 1875, p. 122.
[2] Nelson's Cyclopedia, Vol. VI, p. 263.
[3] Indiana Horticultural Report for 1875, p. 122.



This map shows the number and distribution of fruit projects that were conducted by fruit growers in 1927-28 in co-operation with the Purdue University Department of Horticulture. o, spray rings; O, pruning demonstrations; and X, small fruit projects.—Map made by the Horticultural Department of Purdue University.

From 1852 to 1860 the discussions held at the annual January sessions of the State Board of Agriculture appear to have satisfied the horticulturists, but in the summer of 1860, a desire sprang up for a separate organization devoted wholly to horticultural interests.

Indiana Pomological Society—In October of that year the Indiana Pomological Society was therefore organized, the purpose being to give exclusive attention to the promotion of fruit culture. This society at first met biennially, but in 1863 annual sessions were decided upon, and in 1864 the original name was resumed.

Second Horticultural Society—The reason given for this change of name was that the more comprehensive aim indicated by the first name would enlarge the society's sphere of usefulness. Under this name the society was continued to function and prosper to the present time.

Scope of the Society—The essays and discussions and the findings of the working committees published in the annual reports of the society, related not only to the practical and scientific phase of the growing of all kinds of fruits of this latitude, but also to vegetable and flower gardening, home adornment, forestry, insect depredations, plant diseases and means for their control. Much attention was given in the early years to the identification and classification of varieties of apples and the selection of kinds best suited for home use and the market in the different sections of the state. The emphasis given in the more recent years to market varieties of apples and to the packing of fruits for market shows that the horticultural leaders have been well abreast of the times, ready and eager to take advantage of the enlarging opportunities for commercial fruit growing afforded by improved transportation and growing home markets.

Favoring Legislation—Through the influence of the progressive horticulturists a law was enacted in 1873 for the protection of the fruit growers' friends, the insect-eating birds. In 1875 a law was passed providing for the incorporation of state, district, and county horticultural associations. These enactments and legislation providing for the printing of the annual reports of the horticultural society show a growing public regard for the importance of horticulture and a desire to foster and protect the interests of fruit growers.

Apathy of Many—But notwithstanding the public-spirited efforts of the leading horticulturists and encouraging legislation, the fruit growers in general were lagging far behind in the march of horticultural progress. In 1865 Mr. I. D. G. Nelson of Fort Wayne, a successful commercial fruit grower and for several years the president of the state horticultural society, said, in substance,[1] that although much progress had been made in horticultural lines, there is yet abundant room for improvement "for ignorance and error in regard to fruit and fruit culture still prevail to a discouraging extent." In 1879 the late C. M. Hobbs said, "It is a deplorable fact that there are but few families that raise enough fruit for their own use."[1]

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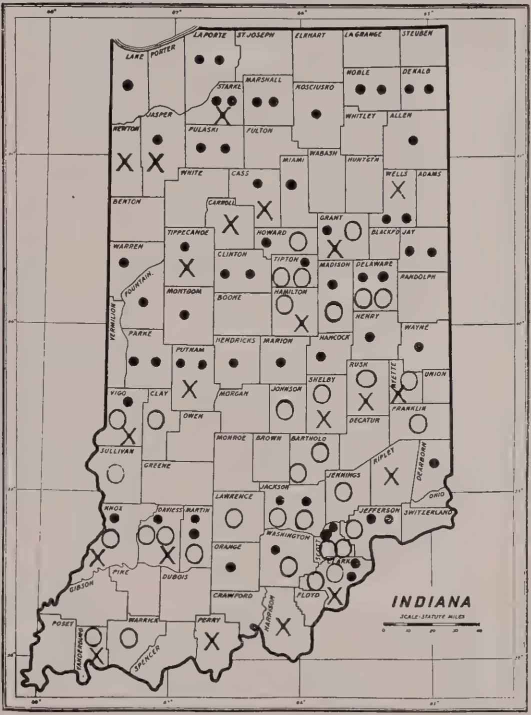
[1] Indiana Horticultural Report for 1866, p. 46.

Indiana Ahead in 1865 — Steady progress was being made however in fruit growing. The fruit committee of the horticultural society, after much inquiry, reported that although the fruit crop of the state was not large, Indiana in 1865 produced "more bushels than any other state in the Union, except perhaps Michigan." "Michigan is the only state that very nearly approaches Indiana in the number of bushels of apples raised, Illinois next, and Ohio next—but the two latter, far short of the two former." The foregoing quotation of course applies to the year 1865. The premier position accorded to Indiana that year by the fruit committee was due to favorable



This map shows the number and distribution of vegetable projects that were conducted by farmers in 1927-28 in co-operation with the Horticultural Department of Purdue University. o, potato projects; O, tomato projects; and X, vegetable projects.—Map made by the Horticultural Department of Purdue University.

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[1] Indiana Horticultural Report for 1879, p. 43.

climatic conditions within the state and unfavorable weather elsewhere, rather than to anything superior in the methods of Indiana fruit growers. In 1867 the apple crop of Indiana exceeded 9,000,000 bushels and the peach crop of the state that year was 1,400,000 bushels.[1] The estimated annual fruit product of Ohio, an older and larger state, was then 7,000,000 bushels. These figures indicate that Indiana was at least "keeping pace" in fruit production.

Quality of Indiana Fruit—For many years the fine quality and excellent flavor of Indiana fruits, especially apples, have been well known; but until recently there appears to have been no systematic, concerted, general effort to boost fruit production in Indiana and thus take advantage of this good reputation and of the unsurpassed transportation facilities for reaching the great consuming centers of the central West. In consequence apples from other states still flood Indiana markets, and in the spring of the year especially, the highly-colored but less flavored apples from the Northwest have had almost a monopoly of the home market.

Commercial Horticulture—Without special advertising, commercial horticulture in Indiana has made relatively slow progress. For this reason large-scale and highly specialized horticultural production in the state is of comparatively recent development. Almost unaided by promotive effort, Indiana horticultural products have steadily won recognition on their merits. Although Indiana does not have vast orchards like some other states, the total annual output from the thousands of small orchards is very considerable.

The writer has found no record of strictly commercial orchards in Indiana prior to 1855. The first report of the State Bureau of Statistics for 1879, states that "apples, pears, peaches, grapes, and small fruits are so commonly abundant and cheap that none but an expert can afford to cultivate them for market sale." The first commercial peach orchard in Indiana was started in 1857 by Argus Dean on the Ohio River bluffs a few miles below Madison. A few years later Mr. Dean also planted a commercial apple orchard. He and his four sons carried on the orchard business together until the death of the father in 1890. After that the sons continued in this business, the youngest, Charles E. Dean, being now in charge. Between 1880 and 1900 the Deans had about 100,000 fruit trees, and thousands of bushels of peaches were shipped to Cincinnati, Louisville, Indianapolis, Chicago, and other points.

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[1] Indiana Horticultural Report for 1872, p. 95.

Flatboating Fruit South—In 1874-5 the Dean brothers took a flatboat load of apples, potatoes, and canned fruit to New Orleans, selling part of the produce at intermediate points. Down-river flatboat shipments of immense quantities of potatoes from Indiana points continued until the early nineties when low prices put a stop to this business. Onions were also thus shipped to southern points. These flatboat down-river shipments which began early in the nineteenth century were suspended during the period of the Civil War, but later resumed and continued to some extent until the early nineties.

Car-load Shipments—It is reported that apples were shipped in car load from Vincennes as early as 1865; and from Orleans or Mitchell about 1875; that car load shipments of melons were made from Princeton as early as 1872; that strawberries were shipped in car loads from the knobs in Floyd County in 1898, and Clark County about the same time. Commercial orcharding and gardening in Indiana, therefore, may be said to have fairly begun in the last quarter of the nineteenth century.

I. ORCHARD FRUITS

Hoosier Apples—Apples are grown in every county of the state, but the prairie soils and the Kankakee region of northwestern Indiana are not so well adapted to the commercial production of this fruit as the rest of the state. The present distribution of the commercial apple orchards (those having 100 or more bearing trees) and the locations of the counties leading in apple production, show that apples will grow well on almost all the types of soil in the state where suitable orchard sites are available. Most of the commercial orchards of the state are located near the larger cities or on transportation lines affording ready access to them.

Leading Counties—The five counties leading in average production of apples, for 1899, 1909, and 1919[1] were Elkhart, Allen, Kosciusko, Marshall, and St. Joseph.

Leading Varieties—At the present time the following are considered the ten leading varieties of apples in Indiana, alphabetically arranged by seasons: Summer: Duchess, Transparent; Fall: Delicious, Grimes, Jonathan; Winter: Rome, Stark, Staymen, Winesap, and York.

Indiana Peaches—Peaches of fine quality are grown in Indiana but the crop is a very uncertain one except in mild seasons and in sheltered locations. Occasionally a fair yield is obtained in a northern county but the great bulk of the Indiana peach crop is grown in the southern third of the state. Owing to sudden and extreme changes of weather, the fluctuations in yield of peaches are very wide even in the most southern counties. To illustrate, Greene county, which produced only a little over three thousand bushels in 1899 and in 1919, had the highest yield in the state—over thirty thousand bushels—in 1909. Putnam County produced over twenty-nine thousand bushels in 1909 but is credited with less than four hundred bushels in 1899. Within the same period the yield in Harrison County on the Ohio ranged from a little over 200 bushels to over twenty-two thousand bushels. In the years named above the yield in Knox County, which is noted for its fine peaches, ranged in round numbers from two hundred to thirteen thousand bushels.

Leading Counties—The five leading counties in average yield for 1899, 1909, and 1919[2] were Gibson, Fountain, Putnam, Sullivan, and Pike. Owing to constantly changing weather conditions it is quite probable that no one of these five counties would lead in three other years within the three decades named. The recent development of peach growing in the southern part of the state places Knox, Lawrence, and Vanderburg in the lead in peach production in Indiana.

Commercial Varieties—Alphabetically arranged, the leading varieties of peaches now grown in the state are Carman, Champion, Crosby, Elberta, Gold Drop, Greensboro, Hale,

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[1] U. S. Census reports for 1900, 1910, and 1920.

[2] Twelfth, Thirteenth and Fourteenth Census Reports.

Heath Cling, Krummel, and Salway. Of these, Elberta, Hale, and Krummel rank the highest for commercial growing.

The Pear—Pears grow well in Indiana and, but for the blight, this fruit would be a very important commercial crop. The U. S. Census figures (1) for 1899, 1909, and 1919 show that the fluctuations in yield were less for pears than for either apples or peaches. This is doubtless due to the influence of the hardy Kiefer pear which is largely blight resistant and a regular annual bearer.

Leading Counties—In point of average yield for the three years named above, the five leading counties are Gibson, Posey, Harrison, Allen, and Elkhart.

Principal Varieties—The leading varieties in Indiana are Anjou, Bartlett, Duchess, Kiefer, Seckel, Tyson, Wilder, and Winter Nellis. In hardiness and blight resistance the Kiefer leads. The Bartlett, Seckel, Tyson, and Duchess, are of superior quality.

The Sour Cherry—The sour cherry produces well in all parts of the state but it is grown more extensively in the north half of Indiana . The sweet cherry is not grown to any extent in Indiana even for home use, as it thrives best farther north. The commercial growing of the sour cherry centers largely around the principal cities or along transportation lines leading directly thereto.

Leading Counties—The U. S. Census figures for 1899, 1909, and 1919 show that the five leading counties in sour cherry production were Marion, Elkhart, Hamilton, Howard, and Clinton.

Varieties—The two varieties of sour cherry which are commercially grown in Indiana are Early Richmond and Montmorenci.

The Plum—Although a hardy fruit and grown throughout the state, the plum is not so largely produced as the other tree fruits mentioned in the preceding paragraphs. The plum is a delicious fruit greatly enjoyed by some, but it is too acid to be a general favorite; and this doubtless accounts for its comparatively limited production in Indiana.

Leading Counties—The five leading counties in average yield for the three years 1899, 1909, and 1919 were Vanderburg, Warrick, Elkhart, Pike, and Clinton.[1]

Principal Varieties—The leading varieties of plums in Indiana are Bradshaw, French damson, German prune, Italian prune, Moore Artic, Reinie Claude, and Shropshire damson. The chief commercial varieties are the Bradshaw, the two damsons, the two prunes, and the Reine Claude.

Grapes—Early in the nineteenth century the chief grape growing centers in Indiana were in Knox, Posey, and Switzerland counties. Although the grape is grown throughout the state at the present time, it is produced more largely in the counties along or near the northern boundary of Indiana.[2]

Leading Counties—The five leading counties in average yield for 1899, 1909, and 1919 were Elkhart, Allen, Marion, Tipton, and Vanderburgh.[3]

Leading Kinds—The leading commercial grapes in the state are Agawam, Catawba, Concord, Delaware, Moore Early, Niagara, Salem, and Worden. Of these the Concord and Worden are considered the most important commercial varieties.

II. SMALL FRUITS

The leading small fruits that are grown in Indiana are the blackberry, the raspberry, and the strawberry. All three grow wild in the state, the wild blackberry and strawberry being most common.

Blackberries—Blackberries, including dewberries, are grown in all parts of the state; but the limited commercial production of this fruit is largely confined to Southern Indiana and is for only the local markets.[4]

Leading Counties—The five counties leading in the average production of blackberries for 1899, 1909, and 1919 were Marion, Floyd, Clark, Washington, and Elkhart.[5]

Principal Varieties—The leading varieties of blackberries in the state are Eldorado, Snyder, and Taylor.

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[1] Twelfth, Thirteenth and Fourteenth U. S. Census Reports.

[2] U. S. Year Book for 1925, p. 281.

[3] U. S. Census Reports for 1900, 1910, and 1920.

[4] U. S. Year Book for 1925, p. 265.

[5] Reports of the U. S. Census for 1900, 1910, and 1920.

Raspberries—The black cap raspberry is commercially grown to some extent in most parts of the state except the southwest corner.[1]

Leading Counties—The five counties leading in the average production of raspberries for 1899, 1909, and 1919 were Clark, Elkhart, Marion, Washington, and Howard.[2]

Chief Kinds—Of the black caps, the chief sorts are Cumberland, Gregg, Kansas, and Plum Farmer, the first and last being considered most important. Of the red varieties, the chief kinds are Cuthbert, Herbert, King, Latham, and Louden. Cuthbert, King, and Latham are considered most important. The red raspberry is not grown commercially in Indiana.

Strawberries—Strawberries, like the other small fruits, grew wild everywhere in the state. For many years strawberries have been grown commercially in the vicinity of Tobinsport for nearby river markets. Strawberry culture as a garden crop has been in vogue for many years throughout the state, but in recent years the commercial center of strawberry growing has been in the vicinity of New Albany[3] although the strawberry is also grown commercially in central and northern counties.

Principal Varieties—The leading varieties of strawberries in Indiana are Aroma, Chesapeake, Dunlap, Gandy, Haverland, Premier, and Warfield. Of these the Dunlap, Premier, Gandy, and Aroma are regarded as the most important.

Leading Counties—In average production for the years 1899, 1909, and 1919, the leading counties were Floyd, Marion, Clark, Elkhart, and LaPorte.[4]

The Other Small Fruits—Other cultivated small fruits include the cranberry, the currant, and the gooseberry. The growing of cranberries is practically an extinct practice in Indiana, only four acres being reported harvested in 1909 and three acres in 1919[5] but currants and gooseberries were reported growing in every county of the state in 1899.[6] In the government reports of the censuses for 1910 and 1920, gooseberries received no separate classification, and only fifty-six acres of currants were reported harvested in 1919.[1] The growing of currants and gooseberries must therefore now be largely limited to the kitchen garden for home use.

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[1] U. S. Year Book for 1925, p. 264.
[2] Twelfth, Thirteenth, and Fourteenth U. S. Census Reports.
[3] U. S. Year Book for 1925, p. 260.
[4] Twelfth, Thirteenth, and Fourteenth U. S. Census Reports.
[5] Thirteenth and Fourteenth U. S. Census Reports.
[6] U. S. Census Report for 1900.

Total Fruit Production — In aggregate production of the several cultivated fruits for the three years 1899, 1909, and 1919, the ten leading counties were Elkhart, Allen, Marion, Kosciusko, Marshall, St. Joseph, Harrison, Howard, Vanderburg, and Hamilton. It will be observed that in this list two counties touch the northern and two the southern boundary of the state. The other six are in central and northern Indiana. This showing does not truly represent the fruit possibilities of southern Indiana, as many of the finest fruits are grown and some of the largest recent orchards are located in that part of the state. It indicates, rather, past differences in the fruit growing and fruit eating habits of the people, and in the transportation facilities and market demand in the north and south sections of the state. In most recent years Knox County has led in fruit production. The census figures show conclusively that wherever orchard sites are available, all the cultivated fruits mentioned except peaches will grow well in all sections of Indiana.

II. Vegetables

A Recent Industry — All the important vegetables of this latitude, except perhaps celery and tomatoes, must have been generally grown in the home gardens of Indiana prior to 1816 when statehood was conferred by Congress. However, the commercial growing of vegetable crops in the state, except potatoes and onions, is largely confined to the present century. The commercial phase of this industry is therefore of comparatively recent development. Home gardening continues on the farms and suburban places and on many town and city lots; but in its commercial evolution vegetable growing in Indiana has passed through the several transitions of market gardening, truck gardening and truck farming. The truck farming phase of the industry in Indiana consists chiefly of the highly specialized production of such crops as onions and tomatoes. Although many other vegetables are grown commercially in the state, the volume of production is not large enough in most cases to include Indiana in the "car lot" tables of the U. S. Year Books. These tables, however, do not accurately gauge the commercial vegetable production of the state because of the increasing delivery of Indiana-grown vegetables by auto trucks.

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[1] Fourteenth U. S. Census Report.

Vegetable Regions—The strictly vegetable regions include the muck soils of northern Indiana, the light sandy soils in the southwest part of the state, and limited sandy areas, chiefly in Jackson and Marshall counties. The most important vegetables grown in the state will receive consideration in the succeeding paragraphs.

Irish Potatoes—The Irish potato is the most important vegetable crop grown in the state. In flatboat days potatoes were grown extensively on the Ohio river bottoms, but this practically ceased as a commercial industry in the early nineties.

Northern Seed—The introduction of northern-grown certified seed potatoes in 1919 effected a marked increase in yield and in soundness of the potato crop and gave a fresh impetus to potato growing. Potatoes are now grown on a commercial scale in every county in the state, on soils ranging from muck and sandy loam to clay loam and silt bottoms. Although some southern counties produce heavily, the aggregate product of the north half of the state was over thirty-five per cent greater in 1924 than that of the south half.

Leading Counties—The U. S. Census figures show that the ten counties which led in the production of potatoes in 1924 were St. Joseph, Elkhart, Floyd, Harrison, DeKalb, LaPorte, Kosciusko, Allen, LaGrange, and Marshall.[1]

Popular Varieties—The leading varieties of potatoes in Indiana at present are Early Ohio and Irish Cobbler for early, and Rural New Yorker for late.

Sweet Potatoes—The sweet potato is grown in a small way throughout the state chiefly in gardens for home use, although in recent years the commercial production of sweet potatoes has developed to some extent especially in southwestern Indiana. The Jersey type of sweet potato is now chiefly grown in the state, and the product is of high quality.

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[1] U. S. Census Bulletin for Indiana, 1925, Table IV.

Leading Counties—The five counties which grew the most sweet potatoes in 1924[1] were Knox, Vigo, Vanderburgh, Clark, and Sullivan. The Knox County yield that year was over 46,000 bushels, and more than four times the product of Vigo the next highest county.

Tomatoes—Next to the Irish potato in importance as a vegetable food and in the extent to which it is now grown in the state, comes the tomato. No other vegetable has so rapidly grown into popular favor as the tomato. The writer remembers when the tomato was believed to be poisonous by some, regarded as a cause of cancer by others, and eaten rather gingerly by a few. It is now recognized as an appetizing, health-giving food when eaten alone either raw or cooked, and as an ingredient in many popular foods and relishes. The commercial canning of tomatoes in Indiana was begun in a small way in 1872 by J. T. Polk in his home in Greenwood, Johnson County. The commercial production of tomatoes in Indiana therefore began in the early seventies. Tomatoes of superior quality are grown in the state, and the area now devoted to this crop places Indiana in the front rank of tomato growing states.

Indiana Greater Baltimore—The Indiana Greater Baltimore, an improved variety of tomato, is an Indiana product, the result of cooperative investigation and breeding by the Indiana Canners' Association, and Purdue University Experiment Station. Tomatoes were grown in 1924 as a field crop in about 80 counties, well distributed over the state.[1]

Leading Counties—The ten counties growing the tomato most extensively in 1924 were Madison, Grant, Jackson, Daviess, Marion, Johnson, Hancock, Delaware, Henry, and Clark.[2]

Principal Varieties—The leading commercial varieties of the tomato in Indiana are Bonny Best and John Baer for early, and Indiana Greater Baltimore and Stone for late. As now grown in Idiana the tomato is largely a field crop for the canning factory and the fresh market.

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[1] U. S. Census Bulletin for Indiana, 1925.

[2] U. S. Census Bulletin for Indiana, 1925, Table IV.

Onions — The onion has been grown commercially in the Ohio River Counties, the surplus product going down the river in flatboats to southern cities. The commercial center of onion growing in the state is now in northern Indiana where muck soils are found. In Jasper County commercial onion growing began in 1892 and carlot shipments of this crop were made in 1894 from Rensselaer. Commercial onion growing doubtless developed in other northern Indiana counties about the same time. Indiana now ranks as one of the leading states in the production of late or storage onions.

Leading Counties — The five counties leading in area devoted to onion growing in 1924 were Whitley, Noble, Kosciusko, Starke, and DeKalb.[1]

Chief Kinds — The leading varieties of onions grown in Indiana are the Ohio, Yellow Globe, Yellow Globe Danvers, and Southport Yellow Globe. The Southport Globe (red, white, and yellow strains) is chiefly grown.

Sweet Corn — Sweet corn has been grown many years in Indiana in a small way for roasting ears and also for forage for livestock. Its production on a commercial scale began shortly after the advent of the canning factory into Indiana in the seventies of last century.

Leading Counties — The five counties growing 1000 or more acres of sweet corn in 1924 were Shelby, Miami, Madison, Bartholomew, and Tipton.[1]

Principal Varieties — The leading varieties of sweet corn now being grown in Indiana are Country Gentlemen and Stowell's Evergreen, with a limited amount of Golden Bantam. The Indiana Canners' Association, in cooperation with the U. S. Department of Agriculture and Purdue Experiment Station, is developing improved strains of sweet corn for canning. The fact that sweet corn is now grown on such a large area in Indiana throws it into the class of field crops.

Green Peas — Green peas have been grown in the home gardens of Indiana for probably a century or longer. The commercial growing of peas in the state began as early as 1881 in Johnson County for the Greenwood factory previously mentioned. At that time the slow and laborious hand method of "brushing", harvesting, and shelling the peas was followed. A few years later J. T. Polk, mentioned in an earlier paragraph, brought to Indiana the first pea-hulling machine from Baltimore.

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[1] U. S. Census Bulletin for Indiana, 1925, Table IV.

In average production of peas for the years 1921-25 inclusive, the leading areas in the state were in central and north central Indiana.[1] The acreage now devoted to the growing of peas in Indiana makes them really a field crop. Figures for yield by counties are not available. The early Alaska is the variety chiefly grown in Indiana for canning.

Green Beans—The bean is another garden vegetable that must have been grown by the early settlers. The commercial growing of green beans for canning is yet in its infancy in Indiana. The earliest figures that the writer has found show that only 600 acres of green or snap beans for canning were grown in the state in 1924.[2] As considerable hand labor is required in the picking of green beans, they are still chiefly grown as a home and market garden crop. The leading varieties of snap beans grown in Indiana for canning are the Stringless Green Pod, and the Golden Wax.

Melon Growing—Commercial melon growing began in the vicinity of Decker, Knox County, in 1882. It is reported that S. A. Jordan was the pioneer water melon grower in Knox County. Later in the eighties the growing of muskmelons, known by the trade name "cantaloupes", was also begun in Knox County. Since then commercial melon growing has spread to the light soils in several counties of the state, but both musk and water melons are most extensively grown in southwestern Indiana.[3] It is reported that the first car load of watermelons was shipped from Vincennes in 1882 and of cantaloupes in 1892. According to another report watermelons were probably first shipped in car lots from Princeton in 1872.

Leading Counties—The five counties which grew muskmelons most extensively in 1924 were Gibson, Knox, Jackson,

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[1] U. S. Year Book for 1925, pp. 402 and 911.
[2] U. S. Year Book for 1926, p. 920.
[3] U. S. Year Book for 1925, pp. 419 and 423.

Sullivan, and Marion.[1] The five counties then having the largest acreage of watermelons were Gibson, Knox, Jackson, Sullivan, and Morgan.[1]

Varieties of Melons — The leading varieties of muskmelons now commercially grown in Indiana are Rocky Ford, Hearts of Gold, Osage, and Tip Top. The varieties of watermelons most largely grown in the state at the present time are Kleckley Sweet for home use, and Tom Watson and Thurmand Gray for shipping.

Cabbage — The commercial growing of cabbage in Indiana is largely limited to the black muck soils of the two tiers of counties in the north end of the state. The leading counties in 1924 were Lake, Kosciusko, Marion, Elkhart, and St. Joseph.[1] Marion county's place in this list is doubtless due to the local demand of the Indianapolis market.

Varieties — The varieties grown in the state include Danish Ball Head, Wisconsin Hollander (yellows resistant), Late Flat Dutch, and Late Drumhead.

Celery — The commercial growing of celery in Elkhart County for the local market is said to have begun about 1875 by Charles B. Harris and Harry Latta of Goshen. Celery is grown commercially on very limited areas of muck soil along the boundary between LaPorte and St. Joseph Counties, and in the northern parts of Elkhart and Kosciusko Counties.[2] Celery is also grown for local consumption at many other points in the state where suitable soil is available.

Lettuce — Leaf lettuce is a common garden vegetable in the state. In recent years it has been grown under glass quite extensively, in or near cities, for home consumption. It is not grown as a field crop in the state. The leading variety grown in the state is the Grand Rapids. Another popular variety is the Black Seeded Simpson. Head lettuce is not grown extensively in Indiana.

Cucumbers — The commercial growing of cucumbers in Indiana for pickling doubtless started in Marshall County with the establishment of a pickle factory at Plymouth in

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[1] U. S. Census Bulletin for Indiana, 1925, Table IV.

[2] I. C. Hoffman, Purdue Experiment Station, Reprint from Indiana Academy of Science, Vol. 34, p. 274.

1891. Cucumbers are now grown commercially on the light sandy soils in several sections of the state. Over 7000 acres were devoted to this crop in Indiana in 1923 and 1924 and more than 8,000 acres in 1925.[1] The leading varieties in Indiana are Snow's Pickling, Chicago Pickling, and Boston Pickling.

Carrots—The commercial growing of carrots in Indiana is quite general in the market gardens. Census figures are, however, not available to show the extent to which this crop is grown in the state. It is doubtless not shipped out of the state to any extent except to Chicago and Cincinnati. The leading varieties grown in Indiana are Danvers Half Long, Early Scarlet Horn, and Chantenay.

Turnips—Turnips for human consumption are grown throughout the state as a truck crop near the cities for the local markets. The census reports give no separate classification for turnips and the other minor vegetable crops.

Other Vegetable Crops—Other common vegetables, including asparagus, beets, parsnips, peppers, radishes, and squashes, have been grown in the state in a small way for many years. Others of more recent introduction include cauliflower, egg plant, kale, kohl rabi, and spinach. Although some of these are widely used in both fresh and stored form they do not figure much as commercial crops. They are grown in both home and market gardens chiefly for home consumption and the local market.

Contribution of Horticulture—The contribution of horticulture to the food supply, health, and satisfaction of the people of Indiana is very important. The steady increase in the number and variety of fruits and vegetables grown in the state and the growing of early and late vegetable crops, together with the modern methods of storing both fruits and vegetables, afford almost a year-around supply of these appetizing and health-giving foods in their fresh form. As truly as bread (now made from Indiana flour) is "the staff of life", the Indiana-grown fruits and vegetables are the "spice" and joy of life, and they also contribute in no small degree to length of life and efficiency of service.

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[1] U. S. Year Book for 1925, p. 904.

CHAPTER XVI.

AGRICULTURAL ORGANIZATIONS IN INDIANA

EARLY Organization — The organization of farmers in Indiana began in the second quarter of the nineteenth century and with varying activity has continued to the present time. In character and aim farmers organizations have shown considerable variation. Some are secret and fraternal, others open but limited to a favored few. Still others are community wide, with no vocational or other restrictions as to membership. All have been predominantly agricultural, and promotive of the calling as a whole or of some particular branch, such as dairying, swine breeding, or bee keeping.

Varied Aims — As to purpose, these organizations have been largely—if not chiefly—economic, educational and informing, inspirational, patriotic, political, practical, protective or social. In most cases several of these features have been combined in the same organization.

Tenure and Scope — In tenure they have been ephemerel or permanent; in viewpoint narrow and partial or broadly inclusive; in influence promotive of class consciousness, class promotion, and even class antagonism, or of community well being and general progress.

In the following pages the several types of farmers' organizations are considered as nearly as may be in the chronological order of their appearance in the state.

I. STATE AND LOCAL FAIR ASSOCIATIONS

Promotive Legislation — Doubtless the first attempt to promote organization of farmers in Indiana was through legislative enactment.

The Act of 1829 — In 1829 the Legislature passed a law[1] to encourage the organization of county agricultural societies for advancement in agriculture by awarding premiums for essays on agricultural subjects and for exhibits of farm, domestic, and mechanical products. The act provided that the members of these societies might assess themselves from one to five dollars apiece, to carry on the work prescribed. Each society might receive donations of land or other property not exceeding $500.00 for the support of its work; but no public funds were provided by the act. (Fig. 150, Early Schoolhouse.)

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[1] Revised Laws of Indiana for 1831, pp. 67-69.

The Act of 1835 — In 1835 an act[1] similar to that of 1829 was passed by the General Assembly with two additional provisions. Under one provision the county might appropriate funds for the work of the society under the prescribed conditions. Under the other the governor was authorized to appoint a State Board of Agriculture composed of five men to serve for five years, or until their successors were chosen. This board was to hold, annually, a meeting which delegates from the local societies were also to attend; receive reports from these societies, collect, publish, and distribute information relating to improvement in agriculture, and make a report of its work to the General Assembly. However, not one cent of money was appropriated by the Legislature for meeting the expenses that would necessarily be incurred by the Board in carrying out the provisions of the Act.

Legislative Agricultural Leaders — To add a personal touch to the record of this early agricultural legislation, the names of those who were the active leaders in securing the passage of the acts above mentioned, are here given. On December 31, 1828, John Dumont of Switzerland County presented the bill to encourage the organization of county agricultural societies. After consideration by committee of the whole, Thomas Hendricks of Decatur County reported the bill without amendment. On January 19, 1829, it was passed by the house, later agreed to by the Senate, and approved by Governor Ray January 22, 1929.

On December 19, 1834, on motion of James H. Wallace of Jefferson County, a select committee of five members consisting of Mr. Wallace and Messrs. Conwell of Franklin County, Schooling of Vermillion County, Latshaw of Sullivan County, and Howard of Dearborn County, was appointed to revise the Act of 1829 providing for county agricultural societies.

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[1] Revised Laws of Indiana for 1834-1840, pp. 87-91.

This committee presented a revised bill, 171, which was passed by the House February 5, 1835, promptly concurred in by the Senate, and approved by Governor Noble February 7, 1835. This was the Act of 1835 previously mentioned.

Board Formed — That the State Board of Agriculture was appointed by the Governor as authorized by the Act of 1835 is evident, from the report of the Committee on Agriculture to the House of Representatives January 30, 1836, which includes the annual report of the State Board of Agriculture.

The Indiana Palladium, Lawrenceburg, for June 13, 1835, published an article giving rules and regulations for the county societies, recommended by the agricultural society of Indianapolis. This article was signed by four members of the State Board of Agriculture as follows: James Blake, John Owens, Larkin Simms, and Moses M. Henkle. The article mentions Mr. Henkle as Secretary of the Board.

Early Agricultural Societies — Under the provisions of the Acts of 1829 and 1835, county or district agricultural societies were organized as follows: The first of which an authentic record has been received, was formed in Franklin County in 1834. In 1835 societies were formed in Jefferson, Knox, Madison, Marion, Posey, and Union Counties. The same year a

A one-room school house in Perry county. This picture represents the rural school houses of 1850 and later.—Photo by J. C. Allen & Son.

tri-county society was formed in Lawrence, Orange, and Washington Counties, Livonia being headquarters. Knox and Pike Counties organized societies in 1836, Morgan County in 1837, Spencer and Switzerland Counties in 1838. Tippecanoe County organized an agricultural society in 1839; Orange in 1841 and Cass in 1842. In 1844 societies were formed in Parke and St. Joseph Counties, and in Allen County in 1847. Hamilton and Shelby Counties formed societies in 1848.[1] It appears that early unsuccessful attempts were made to form such societies in some other counties.

Early Agricultural Fairs—According to reports received, agricultural fairs were held prior to 1850 in the following counties:[1] Franklin and Pike Counties, 1837; Posey, 1837-1841; Spencer County, 1838; Tippecanoe, 1839, and several following years; St. Joseph, 1841; Cass, 1842; Allen, probably in 1847; Parke, 1848; Shelby, 1849. The above named are the only early agricultural societies and fairs—those prior to 1851—of which the writer has learned.

Early Societies Short Lived—These early societies and fairs, organized under the Acts of 1829 and 1835, struggled along for a few years and then, with one possible exception—Marion County—ceased to function. It thus appears that the early efforts to promote the organization of agricultural societies by legislation, proved largely abortive. There were indeed some interested and public-spirited persons who were ready to respond, and a few societies were formed in the thirties and forties but throughout practically the first half of the nineteenth century the farmers generally, were too fully occupied in clearing away the forest and improving their farms to engage in agricultural organization. The short careers of these early societies show that they were in advance of the time.

State Board Became Inactive—On January 13, 1847, the Committee on Agriculture of the State Senate reported that the State Board of Agriculture had continued for two years and then ceased to exist for want of funds to meet its necessary expenses.[2] This report further states that probably there were then not ten agricultural societies in the state.

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[1] Data gleaned from county histories and reported by Librarians and County Agricultural Agents.

[2] Documentary Journal of Indiana, 1846, part II. No. 19.

Appropriation for State Board—That year (1847) the General Assembly appropriated the munificent sum of $50.00 for meeting the expenses of the State Board.[1] With such limited financial resources at its command, the Board could hardly do more than hold an annual meeting each year and make report of its proceedings to the General Assembly. The writer has seen nothing to show that even this much was done by the State Board prior to 1851. In 1851 the State Board was reorganized by legislative enactment and made a corporate body of sixteen members.

State Board Reorganized—The Act of 1851 was supplemented by a second Act in 1852. These acts prescribed the duties of the State Board and set forth the terms for the organization of the county and district agricultural societies.

Agricultural Awakening—The dawn of a new day was approaching. This is evident from the fact that the Acts of the General Assemblies of 1851 and 1852, which were largely reenactments of the earlier legislation for the encouragement of agriculture, met a quick and quite general response in the

An early rural church edifice representing the prevailing type in 1850 and earlier. There are still hundreds of almost exact duplicates in the state. The cemetery (earlier called graveyard) seen just back of the church carries the erroneous suggestion that the chief function of the meeting house was to afford a place for the holding of funerals.—Photo by J. C. Allen & Son.

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[1] General Laws of Indiana, 1847, Chapter 103, p. 128.

organization of county and district agricultural societies. At the May, 1851 meeting of the reorganized State Board of Agriculture, rules were adopted for guidance in organizing local societies and in their making of reports to the Board.

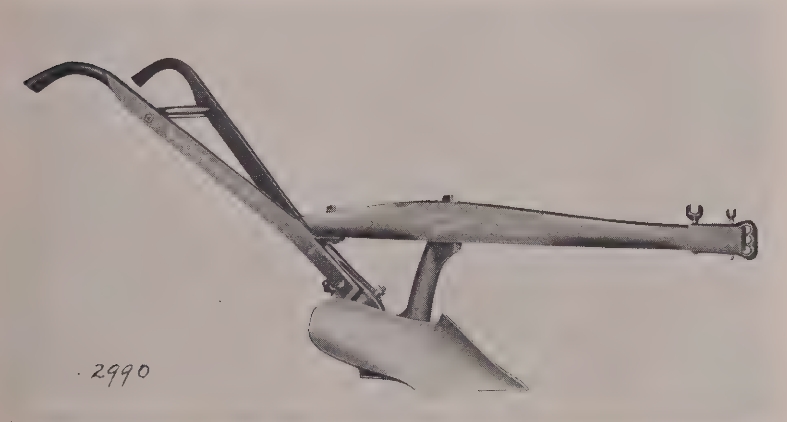
Active Organizations — In his report to the General Assembly in 1852, Joseph A. Wright, who was then Governor of Indiana as well as president of the State Board of Agriculture, states that "More than thirty counties have organized under that law" (1851). The report of the State Board for 1853 contains reports from forty-three county and district societies organized under the Acts of 1851 and 1852. This rapid organization of agricultural societies was followed by a more gradual movement until, by 1888, every county in the state, with the single exception of Crawford (which organized in 1890), had an agricultural society of its own, or in conjunction with one or more adjoining counties.

Vicissitudes of the Societies — Most of these societies passed through various vicissitudes of quick or slow growth, indebtedness or prosperity, popularity or disfavor, usefulness or harmfulness, dormancy and reawakening or gradual decadence and death.

An early tumble-down plant of farm buildings which no county in the state would care to own, but which still persists in some out-of-the-way corners of Indiana. Does it have an unpleasantly familiar look to some Indiana farmers?—Photo by J. C. Allen & Son.

Early Aim—The laws which created these societies state that their aim is to encourage the small as well as the large farmers. The evident early purpose of these societies was to furnish a general incentive to agricultural, mechanical, and home improvement. This purpose was doubtless achieved for a time, when competition was limited to the county or district.

Professional Exhibitors—After a time, however, competition was thrown wide open in many cases in order to attract larger and better exhibits. In consequence, the professional showman developed and made the rounds of the fairs, carrying off the larger premiums, which of course resulted in the discouragement and dropping out of local exhibitors. After a time and in most cases, the mania for horse-racing ran its course at the fairs and most of the premium money went to the contestants in the speed ring.



The reversible form of hill-side plow for turning the furrow down hill when going in either direction. The wheeled implement carrying right and left hand plows will do better work on level ground when back and dead furrows are to be avoided, as in experimental plots.—Courtesy Oliver Farm Equipment Company.

Questionable Amusements—Gambling devices, side shows, and questionable amusements crept in. In many cases these departures from the original aim of the fairs led to a revulsion of public sentiment which either compelled reorganization and reformation or discontinuance of the fairs, and the substitution therefor of local or street fairs for the display and competition of purely agricultural and home products.

State Fair Invaded—For a time even the State Fair suffered from the invasion of monstrosities in side shows and questionable attractions, which, however, it has largely cast off, until now the Indiana State Fair and Exposition has come to be regarded by many as one of the best in the Union.

Good Features of the Fairs—Two especially commendable features of the agricultural fairs have been their socializing influence and their educational value through the object lesson. In a pleasant time of the year, when the seasonal activities of the farm have slackened, the farmers and their families congregate in large numbers at the fairs to visit with one another, mingle with their town and city cousins on the common level, and view, and compare notes on the finest products of farm and factory. By means of these fairs and in consequence of the day or days spent in visiting and sightseeing, friendly relations of urban and rural people have been strengthened and thousands have been inspired to strive for larger and better production.

The Object Lesson—While the object lesson has much inspirational value, it has not been of the highest possible benefit educationally because, under the prevalent fair management, the reasons for the awards have not been clearly set forth.

Awards Not Explained—In many cases the observer has merely seen the prize winning animal, or article, and then gone home without learning what constituted its superior merits. In support of this statement the following is quoted from Secretary Fielding Beeler's preface to the eleventh annual report (1869) of the State Board of Agriculture: "As a general rule, the only information one can gather from the reports of the awarding committee is, that John Doe took the premium on 'Best horse for general purposes, $50' in a ring with seven competitors; no reasons stated as to breed, gait, age, general points of superiority, over his opponents, or anything else. This not only applies to live stock, but to all classes of articles exhibited. If there are reasons that induce committees to award premiums to one and withhold them from others, the public are interested and should be informed of those reasons."

Methods Improving—This, however, is being changed in recent years largely through the judging work of the Four H

Boys' and Girls' Club, in which the reasons are given for the awards or placings.

Early Work of State Board—For nearly two decades, following the beginning of its active career in 1851, the State Board of Agriculture held quite closely to its prescribed work of holding fairs, collecting information relative to agriculture in the way of reports, addresses, essays, and discussions, and publishing it in its annual reports. However, these reports show, quite early, an expressed desire to encourage, foster and direct instruction in agriculture.

A Large Service—In its prescribed role the State Board of Agriculture has rendered a great service to the people of the state. Its published volumes constitute a rich mine of information on more than a half century of the state's agricultural progress since the general awakening of the Indiana farmers about 1850.

Functions Enlarged—The forty-sixth General Assembly (1869) created the office of State Geologist and placed this officer under the direction of the State Board of Agriculture. Accordingly the initial report of the State Geologist was published in the report of the Board for 1869.

The soil pulverizer, a recent tillage implement, is an excellent tool for pulverizing the soil and compacting the seed bed for planting or sowing.

Gradually and, very naturally, the State Board grew increasingly prominent and influential, until it became in a large measure the clearing house of the State for the exchange of thought in agricultural lines.

Agricultural Headquarters — As the various state agricultural and livestock associations were formed, their annual meetings were held in the rooms of the State Board of Agriculture, which served as host to these organizations and published their proceedings in its annual reports. These associations will be referred to later.

Wider Publicity — Beginning in 1872 and continuing to 1890, the State Board of Agriculture published annually a summary of the State Weather Service reports. Later, reports of the Farmers' Institute work, the Experiment Station and Purdue University were regularly embodied in the reports of the Board.

School of Agriculture Favored — Perhaps the most ambitious desire of the State Board of Agriculture was to become patron and promoter of agricultural education. At the January meeting of the Board in 1852, Mr. E. Singer, delegate from Hendricks County, presented a resolution favoring the appointment of a committee to consider "the propriety of suggesting some feasible plan for the establishment of an agricultural school".[1] However, this resolution was laid on the table.

Two years later, January, 1854, the project was brought up again in the form of two resolutions presented by Henry Secrest of Putnam County.[2] The first suggested submitting to the committee on premiums the question of the feasibility of offering a premium for the best essay on establishing an agricultural college. The second suggested memorializing the Legislature on the subject of establishing an agricultural school in connection with the University. These resolutions were adopted by the State Board, but no further steps appear to have been taken.

This question came up again at the January meeting of the Board in 1856 in the form of a resolution, presented by Dr. Ryland T. Brown, member of the State Board from Montgomery County, which reads as follows: "Resolved, That a committee be appointed to enquire into the necessity and practicability of establishing a school of scientific agriculture under the direction and control of the State Board of Agriculture.[1] A committee, consisting of Dr. Brown, Mr. A. Stone, and Col. Schoonover, was appointed. This committee favored the giving, at first, of scientific lectures under the auspices of the Board. Later, Secretary Brown's report, in referring to this project, makes this statement: "From want of sufficient means, and from differences of opinion concerning the best plan for its (the school's) foundation, the attempt was unsuccessful and the subject was postponed."[2]

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[1] Report of the State Board of Agriculture for 1851, p. 30.
[2] Report of the State Board of Agriculture for 1853, p. 32.

Farmers' Institutes Attempted — In the early eighties the State Board favored the establishment of the farmers' institute work under its control and management; and, with local cooperation, two farmers' institutes were held in the spring of

The four-row corn planter, both tractor and horse-drawn, came into use in some parts of the state in 1928.

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[1] Report of the State Board of Agriculture for 1856, p. 6.
[2] Report of the State Board of Agriculture for 1856, p. 26.

1882, at Columbus and Crawfordsville, and two in 1888, at Franklin and Anderson.

An appropriation for this work was desired, but not asked for, because of fear that such request would jeopardize the usual appropriation for the prescribed work of the Board. Thus the State Board lost the opportunity of becoming the godfather of the farmers' institute work which, a few years later, was inaugurated by the General Assembly under a bill introduced in 1889 by Hon. W. W. Robbins, representative from Miami County.

State Board Cooperated — Although there was some disappointment over the outcome, several members of the State Board—notably R. M. Lockhart, Waterloo; Robert Mitchell, Princeton; V. K. Officer, Volga; and J. Q. A. Sieg, Corydon —cooperated actively and effectively, in their respective districts in inaugurating the Farmers' Institute work, administered by Purdue University under the state law of 1889.

Later the State Board decided to concentrate its efforts more exclusively upon the holding of the annual state fairs, in which role it has been notably successful.

II. Special State Agricultural Associations

Horticulturists — The first state society to effect organization, without state aid, was the Indiana Horticultural Society, which was started in 1842.[1] The society remained active for four or five years, and then ceased to function.

For six years after its reorganization in 1860 the society published, at its own expense, the annual reports of its proceedings. Up to that time this was an unmatched example of enterprise and public spirit in the state, which was rewarded by an annual appropriation for the publication of the succeeding reports of the Society.

Tile Makers' Association — The Indiana Tile Makers' Association was organized in the rooms of the State Board of Agriculture in March, 1877. About seventy-five members from various quarters of the state were present. Addresses were delivered at this session on underdrainage by State Geologist E. T. Cox and Dr. R. T. Brown.[2] Although the association was concerned chiefly in tile making, the importance of tile drainage in Indiana justifies this mention of its organization.

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[1] Report of the Horticultural Society for 1875, p. 122.

[2] Report of the State Board of Agriculture for 1876, pp. 257-265.

Bee Keepers' Association — Pursuant to preliminary steps taken in October, 1879,[1] the Indiana Bee Keepers' Association was organized in the assembly room of the State Board of Agriculture in January, 1880. Its purpose as expressed in its constitution is "the promotion of scientific bee culture by forming a strong bond of union among beekeepers and by the discussion of only those subjects recommended for consideration by the business committee."[2] Eighteen counties were represented at this meeting.

Cane Growers' Association — A temporary organization of Indiana sorghum cane growers was formed in December, 1882, in the rooms of the State Board of Agriculture.[3] This organization, which was later made permanent, met regularly for several years for the consideration of subjects relative to the growing of sorghum and the manufacture of sorghum molasses.

State Florists' Association — The list of state industrial associations given in the thirty-eighth annual report of the State Board shows that the Society of Indiana Florists was organized in February, 1887.[4] At its second annual meeting in 1888 President J. I. Carmody said: "I would like to introduce to your notice what, I think, concerns the welfare of every florist, and that is the cultivation of a friendly feeling for each other. The old maxim that 'Two of a trade can never agree' is fast becoming obsolete. That jealousy did exist in our profession as well as in most others, is a fact, but men of broader views and nobler minds have published to the world all that is known of propagation, and still the florist's vocation is not ruined." These fine sentiments of forty years ago are now focused in the watchword "cooperation".

Fish and Game Association — The Indiana Fish and Game Association was organized in December, 1889.[5] The object of the association as brought out in the discussions, is to stock the lakes and streams of the state with the best kinds of fish and to secure enforcement of the law for fish and game protection. The reason for making mention of this organization is that farmers are interested in the protection of the fish and game of the state. In his paper presented at the Round-up Farmers' Institute held in the lecture room of the State Board of Agriculture in March, 1890, Mr. E. J. Howland said: "Farmers can render a greater assistance in this work (fish protection) than those engaged in other pursuits, for the reason that they are the owners of a large per cent of the fish-bearing waters of the State and live contiguous to the waters they do not own, and it is only through them that the laws for the protection of fish can be enforced."[1]

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[1] Report of the State Board of Agriculture for 1879, p. 7.
[2] Ibid, 1879, p. 461.
[3] Ibid, 1882, p. 528.
[4] Ibid, 1888, p. 9.
[5] Ibid, 1889, p. 565.

Farmers' Mutual Insurance Union — The Farmers' Mutual Fire Insurance Union was organized in Indianapolis in January, 1897, at a Union meeting of farmers' insurance companies of Indiana.[2] Briefly, the objects of the Union are to gather information relative to mutual insurance; to promote the interest of mutual insurance companies; and to reduce the

The plow here shown is specially fitted for covering coarse litter in sections invaded by the European corn borer. Its good work is well shown in the above illustration. It was first used in Indiana in 1928.

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[1] Report of the State Board of Agriculture for 1889, p. 335.

[2] Report of the State Board of Agriculture for 1879, p. 236.

number of fires, by suggesting precautionary measures, and thus lessen the cost of insurance. Twenty-three farmers' insurance companies appear to have been represented at this meeting by delegates coming from counties touching the north, south, east, and west boundaries of the state.

Corn Growers' Association — At the inauguration in Indianapolis of the Indiana Corn Growers' Association in March, 1900, fifty persons, representing twenty-five counties, became members.[1] As stated in the constitution of the association, "Its object shall be to advance the agricultural interests of the State." The association has not only accomplished much in promoting improvement of corn and methods of corn production, but it has also helped to secure improvement of small grains, and of soil conditions through the use of lime and legumes.

Its Activities and Influence — The association has published annually reports of its work, at first in the proceedings of the State Board of Agriculture, and, beginning in 1908, in separate pamphlet form. Every county in the state is or has been represented in the corn growers' association. It has a large membership, is very aggressive, and, doubtless, is the most widely influential of any state association in promoting larger and better agricultural production.

Potato Growers' Association — The Indiana Potato Growers' Association was organized in Indianapolis in February, 1905. Its expressed object is "to increase our knowledge of the methods of potato production and improvement, and disseminate the same."[2] In 1906 the association was merged with the State Horticultural Society.[3]

Grain Dealers' Association — The Farmers' Grain Dealers' Association of Indiana was organized at Lafayette in March, 1916. The aim of the association is to aid in the solution of state and national elevator problems. This association covers the heavy grain-producing section of the state. The number of farmers connected with the local associations ranges from 50 to 500. About 50 per cent of the local companies are members of the state association. The locals are both stock and cooperative companies, but the stock associations are becoming cooperative. The inducements to buy and sell through these farmers' associations are good service and a square deal.[1]

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[1] Report of the State Board of Agriculture for 1899, pp. 673, 697-8.

[2] Report of the State Board of Agriculture for 1904, p. 331.

[3] Report of the State Horticultural Society for 1906, p. 105.

Vegetable Growers' Association — The Indiana Vegetable Growers' Association was organized at Lafayette in 1920, and became an incorporated body in 1926. Its aim is the promotion and development of horticultural and vegetable growing knowledge.[2]

The combine harvester came into use in Indiana in 1925. This picture shows a combine at work in a Howard County wheat field.

Fruit Growers' Association — On the initiative and under the leadership of H. H. Swaim of South Bend, the first steps were taken to organize the Indiana fruit growers in 1920. Formal organization of the Indiana Fruit Growers' Association was effected at the 1921 meeting of the State Horticultural Society in Indianapolis. The leading objects of the association are to buy orchard supplies cooperatively, to resist inimical legislation, and to further the interests of Indiana fruit growers by all fair means.

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[1] Letter to the Secretary, April 9, 1928.

[2] Letter to the Secretary-Treasurer, May 28, 1928.

Wheat Growers' Association—The Central States Soft Wheat Growers' Association was organized in 1924, in Indianapolis. It comprises the territory of western Ohio, Indiana, and southern Illinois. Briefly and partially expressed, the object of the organization is to promote the cooperative marketing of wheat, stabilize wheat prices, and finance the operations and assist in solving the problems of wheat growers.

CHAPTER XVII.

AGRICULTURAL ORGANIZATIONS (Continued)

III. STATE LIVESTOCK ASSOCIATIONS

SHORTHORN ASSOCIATION—The State Shorthorn Breeders' Association was organized in the assembly room of the State Board of Agriculture in 1872.[1] In his address Dr. A. C. Stevenson, of Putnam County, who was elected president, said, "You constitute, probably, the first Shorthorn cattle convention ever assembled." He struck a keynote in saying, "A great interest to the country is to be subserved. The cattle of the country, their grazing and feeding, their influence upon land and commerce, may well be considered as of the utmost importance."[2]

The Indiana Shorthorn Breeders' Association took an active part in establishing the National Shorthorn Breeders' Association, which was also organized in Indianapolis later in 1872, with Dr. Stevenson as its first president.[3]

State Poultry Association—The State Poultry Association, whose early members were mostly poultry fanciers and exhibitors, was organized in the rooms of the State Board of Agriculture in 1875. Although over 40 per cent of those present were from Indianapolis, thirteen counties were represented, ranging from LaPorte on the north to Gibson on the south, and from Ripley on the east to Tippecanoe on the west. The aim of the association as stated in its constitution is "To encourage the interest and promote improvement in the breeding and management of poultry."[4]

Wool Growers' Association—The Indiana Wool Growers' Association was organized at Franklin in October, 1876. The preamble to the constitution of the society states: "The object of this association shall be to encourage the interest and improvement in the breeding and management of sheep, by the dissemination of reliable and practical information on the subject, and by cooperating with the officers of the State

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[1] Report of State Board of Agriculture for 1872, p. 75.
[2] Ibid, 1872, p. 77.
[3] Ibid, 1872, p. 394.
[4] Ibid, 1875, pp. 193-4.

Board of Agriculture in making large and attractive shows of sheep at the State Fairs."[1] In 1912 the name of the association was changed to the Indiana Sheep Breeders' and Feeders' Association.

Swine Breeders' Association — The Indiana Swine Breeders' Association was organized in January, 1877, in the assembly room of the State Board of Agriculture. The aims of the Association, slightly paraphrased, are: to promote improvement in the breeds of swine, combat hog cholera, and cooperate with the State Board in making attractive exhibits of swine at the state fairs.[2] At this session the following motion was adopted: "RESOLVED, that we the swine breeders of the state, recommend to the proper authorities that a chair of Veterinary Science be established at Purdue University."[3]

Dairymen's Association — The Indiana Dairymen's Association was organized in the Exposition Building on the State Fair Grounds in September, 1877. In substance, the purpose of the association is to extend the production and improve the

The lime spreader appeared in Indiana about 1910. Some form of lime spreader is now considered a necessary implement on acid soils.

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[1] Report of State Board of Agriculture for 1876, p. 248.
[2] Ibid, 1876, p. 243.
[3] Ibid, 1876, p. 246.

quality of milk and its several products, such as butter, cheese, and inspissated milk, through better management of dairy stock.[1] In 1907 the association was reorganized and incorporated as the Indiana State Dairy Association.

State Dairy Association — The object as set forth in the revised constitution is: "To secure the cooperation of farmers, dairymen, creamery-men or others interested in any form of the dairy industry, promote the interests of the members and disseminate scientific and practical knowledge relating to dairying and the manufacture of dairy products."

Jersey Breeders' Association — The Indiana Jersey Cattle Breeders' Association was organized in the State Agricultural Rooms in January, 1883. In substance the objects of the association are: To bring Jersey breeders closer together, to advance their common interests, and to secure cooperation in bringing into prominence the merits of this breed of dairy cattle.[2] This was the second association established in Indiana to promote the advancement of a single breed of cattle, the Shorthorn Association being the first. In 1894 the constitution of the association was revised and the name changed to The Indiana Jersey Cattle Club.[3]

Shropshire Association — The American Shropshire Breeders' Association was organized at Lafayette, Indiana, in February, 1884, under the name, American Shropshire Registry Association. Briefly stated, the object of the association is to make and preserve an American flock book for the registry of Shropshire sheep and guard the interests of the breeders by helping them to preserve the purity of their flocks.[4]

Largest Sheep Association — This organization is the largest American sheep association in point of both numbers and registrations, and it is believed to be also the largest sheep association in the world.

Horse Breeders' Association — In the report of the State Board of Agriculture for 1885[5] reference is made to a meeting of the Indiana Trotting and Pacing Horse Breeders' Association which was held in Indianapolis in January, 1886. The statement that this meeting was attended by "most of the original members and several new ones", shows that an earlier organization, not recorded in the report, had been effected. Article I. of the constitution of this association "is formed to advance the legitimate interests of the breeders of the trotting and pacing horse in Indiana." At this meeting W. H. Wilson of Kentucky paid the following tribute to the great old Indiana pacer Blue Bull (75): "He is dead, but his name will live as long as lives the history of the American Trotting horse. He was not only King, but he stands as Emperor of all speed producing stallions."[1]

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[1] Report of the State Board of Agriculture for 1877, p. 271.
[2] Report of the State Board of Agriculture for 1882, p. 383-4.
[3] Letter from the Jersey Bulletin March 29, 1928.
[4] Minutes of the Shropshire Association.
[5] Page 440.

Chester White Record Association—In 1890 the Chester White Record Association was started in Indianapolis. Two years later the name was changed to the Standard Record Association, an outgrowth of the original record of Chester White Swine begun in Kentucky in 1885.

In 1913 the Chester White Swine Record Association was formed in Indianapolis by the consolidation of the earlier record of Indianapolis with another record of the breed in Lima, Ohio. The National O. I. C. Record of Kansas City joined the consolidated association in 1915, and the National Record (at first of Kentucky and later of Pennsylvania) followed in 1924. The object of the consolidated association is to secure greater unity of action and better cooperation in advancing

A modern Indiana farmstead. This type of farm plant is becoming increasingly common in the better sections of the state.—Photo by J. C. Allen & Son.

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[1] Report of State Board of Agriculture for 1885, p. 440.

the breed and in promoting the interests of Chester White breeder. The present headquarters of the consolidated association is at Rochester, Indiana.

The Chester White Breeders of Indiana effected the nucleus of an organization in 1903 or 1904, which grew gradually until 1910, since which time annual meetings have been regularly held.[1]

Tunis Sheep Association—The American Tunis Sheep Breeders' Association was organized at Roachdale, Indiana, June 12, 1896.[2] Article II. of the constitution reads: "The object of this association is to promote, improve and preserve the purity of the Tunis breed of sheep, and as a means to these ends, to provide for the registration of the histories and pedigrees of the pure bred flocks of Tunis Sheep in America."

Duroc Breeders' Association—The Indiana Duroc Swine Breeders' Association was organized at Marion in 1897. "The object is to strengthen the interest in the Duroc; to exchange ideas and make improvement as rapidly as possible; to plan our sales and promote pig club work, etc."[3]

Holstein-Friesian Association—The Indiana Holstein-Friesian Association was organized about 1900.[4] A reorganization was effected in 1924 under the above name. The object of the association is the promotion and development of the Holstein-Friesian breed in Indiana.[5]

Angus Breeders' Association—The Indiana Aberdeen-Angus Cattle Breeders' Association was organized in Indianapolis in November, 1901. Briefly stated, the object of the association is the upbuilding of Angus cattle in order that they may meet any competition.[6]

Hereford Breeders' Association—In March, 1902, the Indiana Hereford Cattle Breeders' Association was organized in Indianapolis. The object of the association, as given in the minutes of the secretary, is "To protect the interests of Herefords and offer premiums for superior animals."

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[1] Letter of the Secretary, F. F. Moore.

[2] Letter of the Secretary, Mrs. Edna G. Graham, May 1, 1928.

[3] Letter of the President, Joe Brown, May 31, 1928.

[4] Letter of Sam B. Woods, May 5, 1929.

[5] Letter of Secretary P. L. White, March 31, 1929.

[6] Letter of Secretary C. F. Gobble, March 29, 1928.

Guernsey Breeders' Association—The Indiana Guernsey Breeders' Association was organized at Indianapolis in 1904. This organization failed of sufficient support and soon ceased to function, but was reorganized at Frankfort in 1913. The object of the association is to promote the breeding and improvement of high grade and pure-bred Guernsey cattle in Indiana and to aid its members in buying, breeding, and selling first class animals.

Livestock Breeders' Association—The Indiana Livestock Breeders' Association was organized in Indianapolis in 1904, by delegates representing the State Board of Agriculture, the Shorthorn, Angus, Hereford and Swine Breeders', and Wool Growers' Associations. According to Article II. of its constitution, "the object of this association shall be to promote livestock breeding and feeding and general improvement of the flocks and herds of the State, as well as unite livestock men in common cause."[1]

Board of Directors—The business of the association is conducted by a board of directors representing the several breed-

The modern township consolidated school. Hundreds of such rural school buildings have been built in the state since the opening of the present century.—Photo by J. C. Allen & Son.

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[1] Report of State Board of Agriculture for 1904, pp. 225-6.

ers' associations affiliated with the organization. Membership is open to anyone interested in the breeding and feeding of purebred or grade stock, or in the promotion of the livestock interests of the state.

Berkshire Breeders' Association—According to a letter from Mr. E. J. Barker, whose father was one of the pioneer Berkshire breeders of the state, the Indiana Berkshire Swine Breeders' Association was organized in 1906 or 1908. Mr. Barker states that the object of the association is: "To promote Berkshire sales in the State, to assist in developing the pig club interest at the State Fair and to suggest judges of Berkshire swine."

A modern rural church in Tippecanoe County. Co-operation and merging of separate weak church societies might achieve a like result in hundreds of rural communities in the state.—Photo by J. C. Allen & Son.

Cattle Feeders' Association—The Indiana Cattle Feeders' Association was formed November 15, 1907, at Lafayette. Its object is: "To acquaint cattle feeders with feeding experiments at Purdue and elsewhere and thus promote profitable cattle feeding."[1]

Draft Horse Association—The Indiana Draft Horse Breeders' Association was organized in Indianapolis March 20,

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[1] Minutes of the Association.

1912. Its object is: "To encourage and promote the breeding, rearing, and use of draft horses and mules in Indiana."[1]

Polled Hereford Association—The Indiana Polled Hereford Breeders' Association was organized at Muncie in 1918. The purposes of the association are: "To keep the breeders of Polled Hereford cattle in close touch with each other; to advance the breed; to cooperate with the American Polled Hereford Breeders' Association; and to aid the new and small breeders in finding an outlet for their surplus cattle."[2]

State Poultry Association—The Indiana State Poultry Association was organized at Purdue University October 4, 1919. The object of the Association is to establish and maintain an organization through which individuals may cooperate for the development of all branches of the standard-bred poultry industry. The association is strictly educational and has a membership composed of farmers, commercial poultrymen, breeders, hatchery operators, farm poultry keepers, produce men, and manufacturers interested in the poultry business.[3]

Polled Shorthorn Association—The organization of the Polled Shorthorn Breeders' Association was effected in Indianapolis in 1920. "The purpose of this association shall be to organize the Polled Shorthorn breeders into a working unit and to stimulate the production of more and better Polled Shorthorn Cattle in Indiana."[4]

Ayrshire Breeders' Association—The Indiana Ayrshire Breeders' Association was organized at Purdue University in 1920. The object of the association is to promote the Ayrshire breed in Indiana.

Yorkshire Breeders' Association—The Indiana Yorkshire Breeders' Association was organized at Indianapolis in December, 1922. Article II of its constitution has this statement: "This corporation is not organized for pecuniary profit. Its purpose is the promotion and advancement of the breeding and raising of high-grade pure blood hogs of the strain known as Yorkshire."

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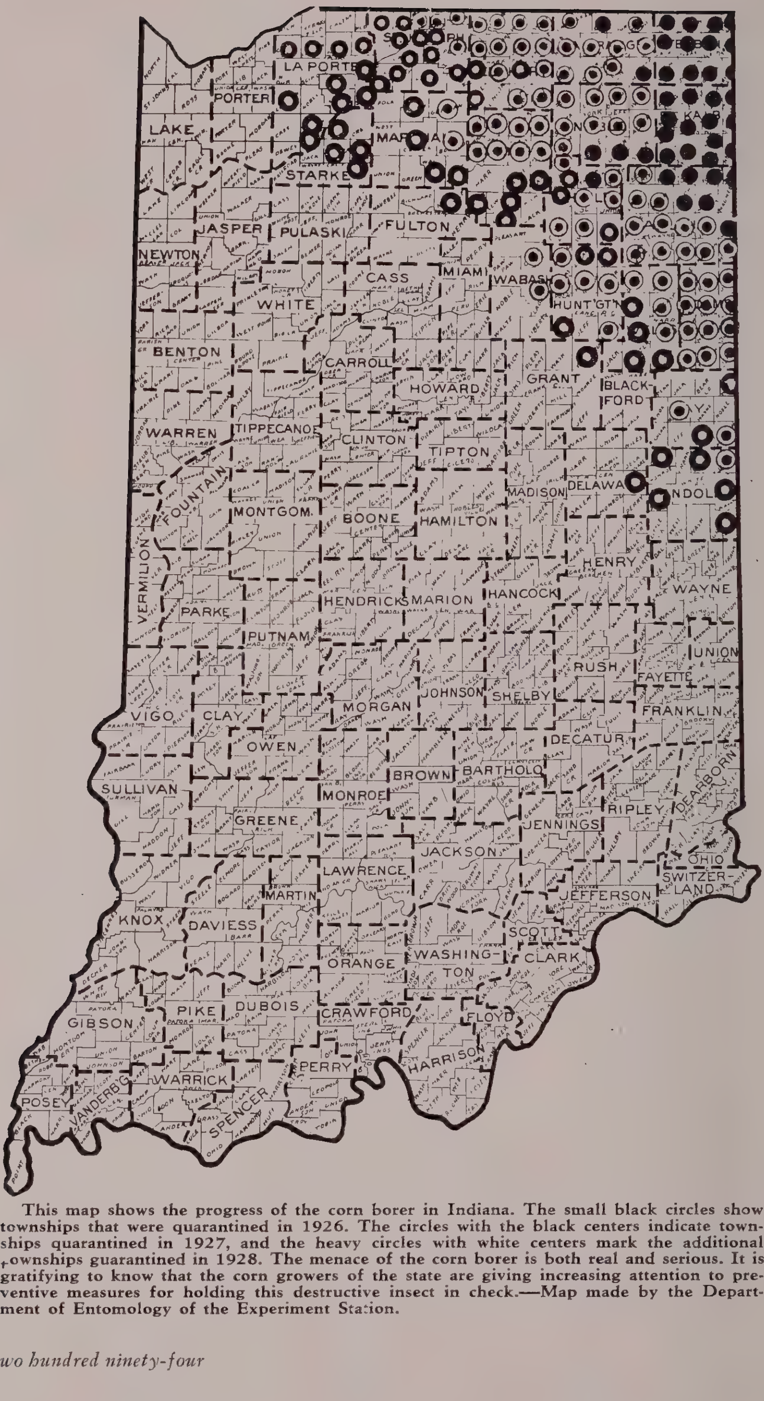
[1] Constitution of the Association.

[2] Letter of H. M. Mullendore, April 16, 1928.

[3] Letter of Secretary M. A. Seaton, March 30, 1928.

[4] Constitution of the Association.



This map shows the progress of the corn borer in Indiana. The small black circles show townships that were quarantined in 1926. The circles with the black centers indicate townships quarantined in 1927, and the heavy circles with white centers mark the additional townships guarantined in 1928. The menace of the corn borer is both real and serious. It is gratifying to know that the corn growers of the state are giving increasing attention to preventive measures for holding this destructive insect in check.—Map made by the Department of Entomology of the Experiment Station.

Rambouillet Association—At a meeting held in the State Experiment Station, January 11, 1928, the Indiana Rambouillet Sheep Breeders' Association was organized. The purposes of the association are: "To promote the interests and sale of Rambouillet sheep; encourage the formation of a Rambouillet lamb club if found feasible, and support the wool show at the State Fair."[1]

Hampshire Swine Association—The Indiana Hampshire Swine Breeders' Association was organized in Indianapolis in January, 1929. The object of the Association is to promote and develop interest in the Hampshire breed of swine.[2]

IV. Fraternal Farmers' Organizations

The Grange—The Grange, known also as the order of Patrons of Husbandry, made its first appearance in Indiana in 1869 in Vigo County, and, by 1874, had spread into every county of the state, according to Mr. C. M. Freeman, Secretary of the National Grange. There were then 1900 Granges in Indiana.[3] Although its original aims were chiefly educational and social, the Grange early became also an economic institution, in which role it functioned actively for a time in Indiana in cooperative buying and selling and in the operation of Grange stores. These stores were, in many cases, successful for a time but later were abandoned as a Grange policy. The rapid spread of the Grange movement in Indiana was doubtless largely due to the hope of many that the order would bring large and quick pecuniary returns. Being disappointed in their expectations, many members dropped out, causing a decided slump in number of Granges and members. Unlike most other fraternal farmers' organizations, the Grange came through this period of depression in the state, reverted to its original purpose, and is now (1928) in a healthy though not rapidly growing condition in Indiana.

Grange Influence—Seeking no unfair advantage or class promotion of farmers at the expense of other classes and desiring only to share equitably in the general prosperity, the Grange has exercised a wholesome stabilizing influence in the state as well as in the nation. Although organized chiefly for farmers, but in many cases admitting others to membership, the Grange is less clannish than most other fraternal farmers' organizations. Enrolling not only men and women but also boys eighteen and girls sixteen years of age, the Grange has exercised a fine socializing influence on farm families and farm communities. The Grange has done much for the education of its members through the rendering of its programs, and it has also been the steadfast friend of school and college education.

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[1] Minutes of the Secretary.
[2] Letter of the President, S. F. Hadley, April 15, 1929.
[3] Report of the State Board of Agriculture for 1874, p. 10.

Other Farm Organizations—The last twenty years of the nineteenth century witnessed unusual activity in the organization of farmers in Indiana. These organizations sought relief from what were considered unjust burdens of the farming class, redress from real or fancied grievances of discriminatory legislation, or from inequitable trade relations. That they accomplished some good in arousing farmers from their chronic condition of lethargy and also some harm in fostering class consciousness and class antagonism, cannot be doubted. For the most part these organizations ran a short, and in some cases a rather hectic, course and then passed out. The chronological order in which these organizations appeared in Indiana is not certain. Several were functioning actively in the nineties of last century.

The Farmers' Alliance—The Farmers' Alliance, whose origin is claimed for several states, is said to have come into Indiana in the early eighties. The Alliance went into politics because of the wide discrepancy between the prices which the farmer received and those which he paid. The Alliance centered attention on prices, monopolies, political grievances and their remedies.[1] The Alliance appears to have been more active in northern Indiana than elsewhere in the state but it survived on Hoosier soil for only a few years.

The F. M. B. A.—The Farmers' Mutual Benefit Association, which originated in southern Illinois in 1882 or 1883,[2] appeared in Indiana in the later eighties. Forty counties were said to be solidly organized in 1890 with a membership of about 40,000 voters. In 1890 there were twenty-six lodges in

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[1] Hibbard, "Marketing of Agricultural Products," pp. 223-229.

[2] Ibid, p. 225.

Johnson County with a membership of about 800.[1] The order spread northward into at least some of the northern boundary counties. In one county, at least, it entered actively into local politics, put out a full ticket, and is said to have elected more township officers than either of the old parties.[1] In one southern Indiana county an acute stage of feeling developed in 1890 or 1891, the farmers and merchants being lined up in two hostile camps. This tension was of short duration and the order ceased to be active before the end of last century.

Patrons of Industry—The order of Patrons of Industry, which is said to have originated at Port Huron, Michigan, in the later eighties, came into Elkhart, LaGrange, Noble, and Steuben Counties in the early nineties.[2] It probably existed in several other northern counties about the same time. It was a secret fraternal order, and men and women were admitted to membership which, however, was limited to persons engaged in agricultural pursuits. In aim it was chiefly economic, and it maintained company stores for a time. It was a short lived organization in Indiana and subject to a good deal of ridicule, being nick-named by outsiders "pigs of Israel" and "pigs of ignorance".

The Gleaners—Another fraternal order called The Gleaners, which started in Michigan in 1894, came into northern Indiana in the late nineties. This is a secret order open to men and women engaged in agricultural or closely allied pursuits. It is an economic organization, with insurance of its members as a prominent feature. It is still (1925) in active existence in fully one-third of the counties, chiefly in the north half of the state.[3]

Society of Equity—The American Society of Equity, whose chief proponent for a time was J. A. Everitt of Indianapolis, was said to have been organized in 1902, although the germ of its beginning doubtless became active in the nineties of last century. Mr. Everitt published for a time a paper, called Up-to-date Farming, which was the official organ of the society of Equity. He also published a book entitled "The

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[1] Indiana Farmer for June 14, 1890.

[2] Letters from H. S. K. Bartholomew, R. L. Thompson, Mrs. Carl Tuttle, and James T. Latta.

[3] Letter from R. L. Holloway, President Ancient Order of Gleaners.

Third Power". He advocated the building of granaries, warehouses, and elevators; cooperative marketing; and the organizing of farm finances to enable the farmers to hold their crops for higher prices.[1] The name of the society was captivating and many farmers were said to have joined. It is believed, however, that the numbers were, at times, exaggerated. The Equity Society flourished for a time in Indiana but proved to be shortlived and soon passed out.

Farmers' Union — The Farmers' Educational and Cooperative Union, which started in Texas in 1902, was introduced into Indiana about 1910 or 1912. In 1925 the Union was organized in some fifteen counties of southeastern Indiana with a reported membership of about 2500. The Union is a fraternal secret farmers' organization which admits both men and women to membership. Briefly put the aims of the organization are: To educate the agricultural classes, encourage systematic production, maintain profitable prices for agricultural products, assist members in buying and selling, discourage the credit system, eliminate gambling in farm products, elevate the standard of living on the farm, secure equity, and promote harmony and the observance of the Golden Rule.

Group of Farmers' Institute Speakers of Purdue University, 1930.

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[1] Hibbard, "Marketing of Agricultural Products," p. 231.

V. EDUCATIONAL AND ECONOMIC ORGANIZATIONS

Farmers' Institutes—The Farmers' Institute is the earliest form of systematic Agricultural Extension in America. This movement began in the late sixties or early seventies of last century.

How Started—It was inaugurated by various agencies, including the Commissioner or Minister of Agriculture; the State Board of Agriculture, as in Ohio; the Agricultural College, as in Michigan; or the State Legislature, as in Indiana.

Institutes in Indiana—As before stated, farmers' institutes were attempted in Indiana in 1882 by the State Board of Agriculture. The institute work was inaugurated, however, under State control in November, 1889, by Purdue University. Though the farmers' institute is not strictly a state organization, the work is state-wide. At first the work was carried on with the cooperation of temporary local organizations, but within five years permanent organizations were effected in every county of the state, first as county institute associations and later as local associations at outlying open country points, wherever suitable places of meeting were available. The work was thus early brought within easy reach of every farm family in the state. With few exceptions permanent organizations have been maintained in the several counties to the present time (1930).

Community-Wide Aim—The farmers' institute work, as conducted in Indiana and elsewhere, is unique from the fact that, although organized primarily for and by farmers, its aim, always and everywhere, has been to interest, enlist, and benefit all classes of the local community. Hence, there has been a happy and effective blending of the labors of the farmer and farm home maker with those of the judge, the lawyer, the banker, the merchant, the railroad man, the minister, the teacher, the town or city dweller, the agricultural college, and the experiment station.

Institutes Autonomous—Ever since permanent local organization was completed, in the early nineties, the farmers' institute work in Indiana has enjoyed a larger measure of autonomy than any other extension activity. Although a state leader is employed by Purdue University, his chief work is the assisting of the local associations, by securing effective and acceptable speakers and by keeping a general oversight and record of the work.

Era of Cooperation—Doubtless because of the prevalence of class organizations in the state when the farmers' institute work was inaugurated there was a good deal of suspicion and open question as to the nature and purpose of the new movement. Some farmers in nearly all parts of the state at first held aloof or at least took no active part in the early institute meetings. However, a large majority of the more intelligent farmers, as well as the business and professional men and townspeople generally, cordially received the work and participated in the proceedings of the institute meetings. Holding steadily through the years to their purpose of promoting community well-being along with agricultural advancement, the farmers' institutes have had their full share in bringing about the present era of understanding, good will and cooperation.

The winning 4-H Club baking team of girls judging bread at the 1929 State Club Round-up at Purdue University.—Illustration furnished by the Club Division of Purdue University.

Other Extension Work—Being first in the field, the Farmers' Institute has become the prolific mother of many other forms of extension organization and activity, including state and district conferences and short courses; work on seed corn, dairy products, fruit, and home equipment; special railway trains; competitive exhibits of farm and home products; boys' and girls' clubs; demonstration farms and project work; specialized one-day or two-day dairy, fruit, hog, poultry, home economics, and other "schools". Although started as a separate activity of Purdue University, the farmers' institute work, since the season of 1910-11, has been carried on as a division of the Agricultural Extension Department of Purdue.

Short Courses in Agriculture—The holding of district farmers' short courses began in Indiana in 1907. Later these short courses were limited to the county. At the present time they are carried on under a fuller and more specific title as for example: "Decatur County-Purdue Short Course in Agriculture and Home Management." These short courses are an important and valuable extension activity of Purdue University. They are really adult schools of two or more days' duration for giving intensive practical instruction in agricultural lines, including soils, crops, livestock, farm management, dairying, horticulture, animal and plant diseases, the home, school, church, and community.

Preparation for these farm schools is effected by enlisting the cooperation of bankers, merchants, ministers, teachers, chambers of commerce, and other organizations with farmers in providing money, places for meeting, livestock and other equipment for giving the instruction and demonstrations.

These short courses are admirably adapted to meet the needs of progressive farm communities surrounding county seat and other live towns where the necessary halls, rooms and material equipment can be readily provided. These farm schools are reaching scores of communities and giving a strong impetus to the adoption of better methods on the farm and in the home. They regularly close with a goodwill banquet for both rural and town folk and are a potent influence in developing mutual understanding, good-fellowship, and community cooperation.

Farmers' Clubs—With perhaps a single exception, the farmers' club movement in Indiana is confined to the present century. This exception is the twelve-family Salem Farmers' Club of Washington County, organized in 1892, and reported still active in the thirty-sixth year of its existence.

In 1915 sixty-seven farmers' clubs responded to a questionnaire sent out from the Agricultural Extension Department of Purdue University. These clubs were then fairly well distributed over the state.

Family Membership — The number of families represented in these clubs varied from less than twelve to 314. The number of meetings held each year ranged from one to twenty-six. In the smaller clubs new families were admitted by vote of the members. Any persons interested could join the larger clubs.

Places of Meetings — The small clubs usually met in the homes of the members in rotation. The large clubs generally met in church or schoolhouse, but occasionally out of doors in summer time. A midsummer picnic was a common feature. The funds needed were generally raised by membership fees or dues.

The Club Programs — It was the custom of many of the clubs to issue annually a booklet giving the several places of meeting for the year and the program in outlines for each

This is a 1929 picture of the living members of the twelve-family Salem Farmers' Club of Washington County. This club, which is the oldest in the State, has been continuously active since its organization in 1892. Three of the charter members are still active, namely, Mr. Asa Elliott, extreme right, lower row; Mr. Charles N. Lindley, the second one from Mr. Elliott, and Mrs. Lindley, directly back of her husband.—From photo furnished by Mrs. C. N. Lindley.

meeting. The programs submitted showed that the clubs were social, literary, practical, and economic. In the smaller clubs, especially, large opportunity was afforded for literary self-culture in speaking and writing.

Luncheon or Dinner—Those clubs which held morning and afternoon sessions usually inspected the farm and premises of the host in the forenoon. At noon a simple luncheon was served and a musical and literary program was rendered in the afternoon. An evening meal was a frequent feature of those clubs which met at night. The refreshment feature proved highly promotive of socialibility and good fellowship. The social and educational advantages of the actively participating members of farmers' clubs are well worthwhile.

Club Influence—The homes and farms of club members, as a rule, become object lessons of rural taste, tidiness and prosperity; and, in this way, perhaps, more than in any other, the farm communities in general are benefited, and the uplifting club influence exerted beyond the pale of actual membership.

Farmers' Congress—The Farmers' State Congress of Indiana was organized in Indianapolis in February, 1903.[1] One purpose of the State Congress was evidently to secure state cooperation with the National Farmers' Congress, which appears to have been the outgrowth of meetings held in the South in the early seventies.[2] The expressed object of the Farmers' State Congress "shall be to advance the agricultural interests of the State."[3] The activities of the State Congress appear to have been directed largely toward influencing legislation favorable to agriculture.

State Congress a Federation—The Farmers' State Congress was not a well-knit organization, but rather, a delegate body composed of representatives of the counties, congressional districts, and the various farmers' organizations. Although there was a largely attended convention of the Farmers' State Congress in Indianapolis in 1904, as shown in the State Board's annual report for that year, no mention of the Congress is made in the subsequent reports. The congress proved to be short-lived in Indiana and soon passed out.

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[1] Report of State Board of Agriculture for 1904, pp. 379-386.
[2] Hibbard, "Marketing of Agricultural Products," p. 192.
[3] Report of State Board of Agriculture for 1904, p. 381.

Home Economics Association—The Indiana Home Economics Association was organized at Purdue University in "Farmers' Week", January 17, 1913. The objects of the association, as stated in its constitution, are: To promote the general knowledge of home economics; to bring into affiliation all organizations dealing with this subject; to secure the teaching of home economics in the schools of the state.

The association began its career with fifty-eight charter members and has met annually. The membership is now largely made up of home economics classes organized by the Department of Home Economics Extension of Purdue University. Through these classes the association is now (1930) functioning actively in fully four-fifths of the counties. As the work is steadily growing, the goal—representation in all of the counties—will doubtless soon be reached. At its first meeting a resolution was adopted requesting a legislative appropriation of $100,000 for a home economics building. This request was repeated from time to time until 1923, when the desired building was secured.

Farm Bureau Federation—Early in the development of the county agent work in Indiana the need of organized local cooperation with the county agent became apparent, in order to make his services most widely useful. As early as 1918 the formation of local organizations, usually known as better farming associations, was begun. Their chief purpose, at first, was to assist the county agent in formulating and putting on a county-wide program for agricultural betterment. As these local organizations began to multiply and function actively, the leaders of the movement realized the need of, and the opportunity for, a state-wide organization, with county and township branches, which might strengthen and extend the movement for agricultural improvement throughout the state.

When Organized—This led to the formation of the Indiana Federation of Farmers' Associations March 25, 1919. In December, 1923, the name was changed to Indiana Farm Bureau Federation. The official organ of the federation first appeared in 1919 as "The Organized Farmer". In 1923 its name was changed to "The Hoosier Farmers".

Membership—Membership is limited to actual farmers and others directly interested in agricultural advancement.

Direct membership is in the local unit or township organization with delegate membership in the county and state organization.

Aim of the Federation — Although the Indiana Farm Bureau Federation, in most cases, still cooperates actively with the county agent in accordance with its original purpose, its aims as set forth in its amended constitution, adopted in November, 1924, are: "To correlate, strengthen, and unite the county farm bureaus and other local farmers' organizations of the state of Indiana; to develop its agriculture and to promote, protect and represent the business, economic, social and educational interests of the farmers of the state."

Its Growth and Extent — Although the youngest general farmers' organization in the state, the Federation, in 1928, was fully organized in 89 of the 92 counties, with a membership of approximately 60,000. Since its organization, the activities of the state federation have been largely directed to the promotion of cooperative buying and selling and to securing legislation in behalf of agriculture. The local units are very aggressive and influential in enlisting the progressive farmers and in securing the cooperation of chambers of commerce and bankers and merchants in conducting short course, or adult schools of agriculture and home economics, which have proven an effective means of extension teaching.

Summary — With the Gleaners functioning in northern Indiana, the Farmers' Union in southeastern Indiana, the Grange here and there over the state, and the Farm Bureau now organized (1933) in every county, it would seem that the needs of Hoosier farmers, in the way of these types of organization, are quite fully met at the present time.

Conditions of Success — In closing this chapter on farmers' organizations it seems proper to observe that the value and success of organized effort depend not only on the soundness of the organization and the worthwhileness of its aims, but also on the intelligence, loyalty, and wisdom of its chosen leaders and the unity, faithfulness, and persistence of its members.

Keynote of Organization — In any class organization there is always the liability of losing balance and perspective and the possibility of overlooking the rights of others, when only fair dealing is intended. With the increasing intelligence of our people and the growing recognition of the interdependence and mutuality of interests of all classes, let us hope that this era of general organization of farmers will enhance the prosperity and well being of the Commonwealth.

CHAPTER XVIII.

A CENTURY OF AGRICULTURAL PROGRESS

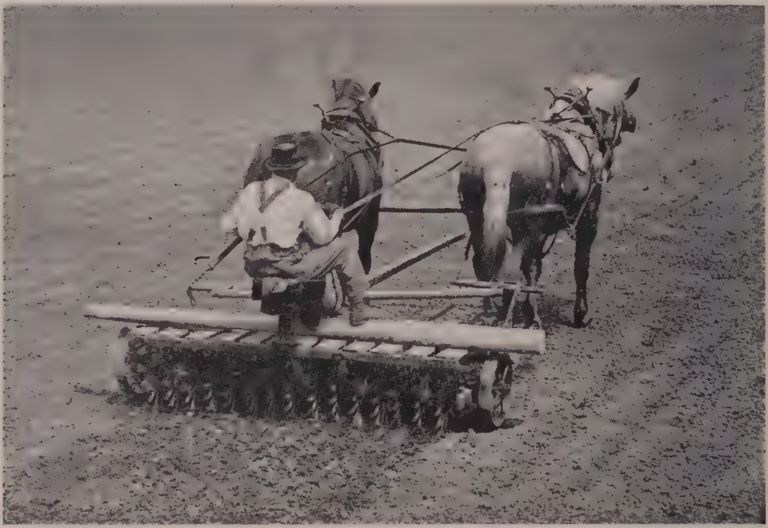
FROM the primitive farming of 2000 years ago to the up-to-date agriculture of today is a wide span; but it has been practically covered in Indiana, as elsewhere, in the last 125 years.

Contrasting Conditions—The two extremes of this recent remarkably rapid agricultural evolution are seen in the ancient and modern types of farm implements and machinery; in the pioneer farm and the present farmstead; in the mongrel animals of yesterday and the pure bred live stock of today; in the trails and mud roads of 1825 and the improved highways of 1925; in the markets for, and the output of, farm products then and now; in the types of churches and schools and the amount of schooling available to the people of the open country in the two periods under consideration; in the character and extent of the agricultural information disseminated by the pioneer and modern farm and newspaper press; and in the attitude and status of farmer and his family at the beginning and end of the last century.

Wide Divergence—Taken together, these several contrasts present in the two extremes of the last 100 years of agricultural development, a wideness of divergence unequaled in any previous century.

Many Causes Operating—Many causes have conspired to bring about the sweeping changes in the agriculture of the last century and a quarter. In their operation these causes have not been confined to the field of agriculture. Indeed the agricultural evolution would have been impossible but for like development in other fields of human activity. In the succeeding pages the aim will be to consider those causes which have been most active and influential in the development of modern agriculture.

The Sturdy Pioneer—First and foremost of these causes were the pioneer farmer and his faithful wife. The forest had to be cleared away, the swamps drained, and the fields enclosed with rails split from the trunks of trees. This was a herculean task requiring brawn and endurance. The pioneer farmer had both of these qualities, and he and his good wife also had courage and perseverence and patience and faith in themselves, faith in nature, and faith in a divine Providence that would reward their abundant and arduous labors. Thus they toiled in hope through the slow moving early years of the pioneer period. Not infrequently one or the other succumbed to the severe struggle and exposure of pioneer conditions. In most cases, however, their strong constitution and power of endurance carried them through—although perhaps with bent form and stiffened joints—to see the fruition of their efforts to make ready for the beginnings of agriculture in the erstwhile wilderness of the Hoosier State. For their heroic struggles and sacrifices in paving the way for a better day let us revere their memory and strive to be worthy of the "goodly heritage" they have left.



The rotary hoe is an admirable implement for destroying weeds just as they appear above the surface. It also serves well to break the crust formed by packing rains. This is a very recent implement in Indiana.

Growing Markets—After the first few years of loneliness and isolation, during which the pioneer could do little more than provide for the needs of his growing family, villages and small towns began to grow, first at convenient river landings along the Ohio, Wabash, White, and Whitewater rivers and later at inland points following the course of settlement. These early small consuming centers afforded a limited market for the farmers' small surplus of food products and encouraged him gradually to enlarge the area under cultivation.

Agricultural Expansion — With the removal of the Indians, the completion of the Government land survey, and the opening of practically the entire state to settlement, which occurred in the second quarter of the last century, there came a floodtide of immigration and consequently a rapid expansion of cleared land and the area devoted to cropping.

Improved Transportation — The growing need for better transportation necessitated the removal of obstructions from the smaller navigable streams, the cutting out of roadways, the building of corduroys across swampy ground, the construction of plank roads, and the opening of canals. These improvements made more accessible both near and distant markets and further stimulated the expansion of the farmed area.

Better Farm Implements—Simultaneously with the growth of markets and transportation facilities came the earlier improvements in tillage implements and harvesting machines which enabled the farmer to cultivate many more acres and greatly increase his volume of production. The rapid advance in Indiana of the art or handicraft of agriculture in the first half of the last century witnessed no corresponding change in the science of agriculture. Throughout almost this entire period there was little thought of soil exhaustion and less effort to husband or restore soil fertility.

Soil Thought Inexhaustible — Many of the farmers of that period, if they gave the matter any consideration, thought the soil was inexhaustibly fertile. The repeated heavy yields of the rich bottoms, subject to annual overflow, afforded apparent reason for this mistaken view. Of course, there were those who saw the evil day approaching and sought by both preaching and practice to avert it, but the large majority of the farmers prior to 1850 were soil miners, exploiters of soil fertility, just as the farmers and others of the more recent period were extravagantly wasteful exploiters of the rich gas fields of north central Indiana. Thus it appears that the Indiana farmers, like their neighbors in other states, moved forward slowly and usually under the pinch of necessity.

Improvement in Livestock—Early in the second quarter of last century improved cattle were brought to a few widely scattered points in the state. Here and there observing farmers had noted the superiority of the Durham cattle over the common mongrel stock. Accepting the tenet that "like produces like" they invested in a bull, a pair, or a trio of these better cattle. These improved specimens of the bovine family were said to have effected locally much improvement in the common stock. However, because of the prevalent unfounded prejudice that the "full bloods" were "fancy cattle" for the rich man only to dabble with, their influence did not begin to widen much until fully a quarter of a century later.

The writer has seen no evidence to show that the principles of either breeding or feeding were taught or emphasized in the State prior to 1850 or later, and this doubtless accounts for the slow advance of the pure breds in the first half of last century. However, with the increasing number of fairs in the fifties, which brought all classes of improved livestock to the front, the popularity of the pure breeds or their grades steadily increased.

Agricultural Advance—The third quarter of last century appears to have opened auspiciously for agriculture. The canals were affording cheap transportation to remote markets, home markets were developing, the railroads were coming and bringing not only rapid transportation but larger home consumption of farm products because of the new towns that were springing up. Prices were good, there was a general feeling of optimism, and the time was ripe for agricultural societies and fairs which were rapidly developing under the incentives afforded by the acts of the General Assembly of 1851 and 1852 for the encouragement of agriculture. These several stimuli, together with the growing popularity of "blooded" livestock and the rapid development of farm implements and machinery which made possible larger and better farming, all conspired to bring about an epochal advance in Indiana agriculture.

The Art Outran the Science—This advance, however, was chiefly in the art or handicraft of farming rather than in the science of agriculture. Thousands of Indiana farmers, enabled by the fairs to see assembled the finest products of the orchard, field and feed lot, delighted with the pure-bred beauties of the show ring, awakened to the possibilities of improvement, spurred by the incentive of premiums, and aided by better implements of tillage, were inspired to adopt better methods. More thorough cultivation, deeper plowing, sub-soiling, under-draining, better utilization of manure, even the use of the commercial fertilizers in a few instances, and diversified cropping, including the growing of legumes to meet the feed requirements of the improved livestock, were the several means employed by the wide-awake farmers. The practices of the better farmers began to be copied by their neighbors. Thus, chiefly by object lesson, demonstration, and imitation, a very material advance in methods of farming was effected. Many of these farmers, doubtless unconsciously, were beginning to apply the principles underlying the best farm practice; but they would have been slow indeed to admit that, without knowing why, they were really adopting scientific methods or following so-called "book farming".

The four-row corn cultivator came into use on the larger farms of Indiana in 1928. In large fields this implement practically quadruples the man power of the earlier one-row cultivator.

Education Unpopular—Although agricultural practice was improving, public school and agricultural education was unpopular in Indiana prior to 1850. For his advocacy of free schools in 1826 John H. Farnum, referred to in Chapter VII, came near being mobbed, the opposition being due to the belief that such schools would increase taxes and that they were supposed to have been started originally for paupers.[1]

In 1826 John McClure established an industrial school at New Harmony.[2] The first manual training school in the state is said to have been started in Jefferson County. There is no evidence to show that agriculture was taught in either of these schools. A free public school was opened in Jefferson County in 1844.[3] This was perhaps the only one in the state at that time.

Addresses on Agriculture—Notwithstanding the prevailing indifference to public education and the low estimate of agriculture held by nearly all the farmers as late as 1850, professional men, both speakers and writers, were slowly paving the way for a better day for agriculture by addresses at the fairs and at meetings of the agricultural societies. The early reports of the State Board of Agriculture teem with addresses and essays by doctors, judges, lawyers, ministers, professors, and occasionally by active farmers. These speakers and writers were quite generally eulogistic of agriculture and agricultural fairs, but critical of the apathy, indifference, and lack of the spirit of emulation, shown by the majority of the farmers.

Probably in the forties, Liebig's theory of mineral fertilizers had taken root in the minds of some of the thinkers who descanted learnedly on the importance of a knowledge of the composition of the soil in order to be able to supply those elements which chemical analysis showed to be deficient.

Progressive Views—The following references will serve to show the trend of sentiment regarding agriculture in the early fifties: Joseph R. Williams (quoted in Chapter VII), in addressing the Elkhart County Agricultural Society emphasized the importance of books, fairs, schools, and chemical analysis and investigations in advancing the art and science of agriculture.[1] In the preceding chapter reference was made to the resolutions of E. Singer of Hendricks County[2] and Dr. R. T. Brown of Montgomery County[3] favoring the establishing of a school of agriculture under the auspices of the State Board of Agriculture. But the most logical plea for agricultural education which the writer has seen in the State Board's annual reports is that of Mr. Isaac Kinley of Henry County: "The farmer applies, practically, principles connected with almost every science. That he should understand these principles in order to apply them successfully is too evident to require an argument. The science of agriculture being of so great importance, I am half tempted to suggest the propriety of offering a premium for the best work, adapted to schools, on this

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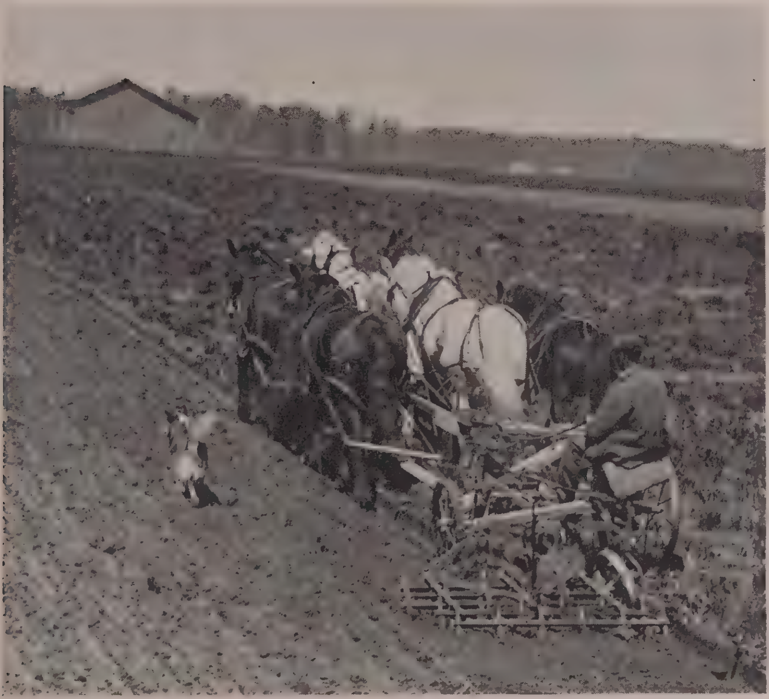
[1] Stevens, "History of Washington County," pp. 335, 615.
[2] Letter of Mrs. Nora C. Fretageot, New Harmony.
[3] Miss Drusilla Cravens, Madison.



A six-horse multiple hitch tandem outfit at work near Mulberry, Indiana, in 1928. The two-bottom plow is followed by a small harrow which partially "fits" the soil. By means of the multiple hitch, four, five, six, and eight-horse teams are being used in the state for breaking and fitting the ground in a single operation. In many cases a heavy tractor takes the place of horses in preparing the soil for planting or seeding.—Photo by J. C. Allen & Son.

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[1] Report of State Board of Agriculture for 1851, p. 88.
[2] Ibid, p. 30.
[3] Ibid, 1856, p. 6.

subject."[1] Mr. H. S. Cathorn, mentioned in Chapter VII, in addressing the Knox County fair said: "There is no department of human industry that stands so much in need of scientific establishments for the education of those who are to practice it through life as the agricultural. * * * We hope public attention will be directed to this subject, and that the time is not far distant when the education of farmers, as farmers, will be thought as important as the education of professional men."[2]

Indifference Prevalent—Notwithstanding the pleas of agricultural leaders in behalf of education for the farmer, and in spite of the rapid erosion and gullying of the steep hillsides in southern Indiana and the gradual waning of soil fertility elsewhere, as shown by decreasing yields under the prevalent practice of constant cropping without adequate returns to the soil, there was still wide-spread indifference to agricultural education. The farmer of the fifties—and even later—was not altogether to blame for accepting the tradition, which had really been handed down to him, that a liberal education was for the leisure and professional classes; but of course he was in error in thinking there was no need of education in the physical sciences and in their applications to agriculture.

Act to Provide for Agricultural Education—There were some, however, who sought through education to correct the prevalent practices which resulted in soil impoverishment. In response to their demands, a section of an act of the General Assembly of 1852 required the establishing of an Agricultural Department in the (State) University. Under this act provision was made in 1852 for instruction in natural philosophy, chemistry, animal and plant physiology, botany, geology, and analysis of soils and minerals. However, no instruction in agriculture was given.[3] This failure was practically inevitable, as there were then no funds provided for teaching agriculture, no specially trained teachers of agriculture available, and probably no applicants for such instruction. The simple fact is that the large majority of the farmers of Indiana were then—and even a quarter century later—not ready for the advent of agricultural education.

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[1] Report of State Board of Agriculture for 1852, pp. 359-366.
[2] Report of the State Board of Agriculture for 1852, p. 166.
[3] Eesary, "History of Indiana," Vol. II, pp. 1004-1005.

Agricultural Press Weak—What of the agricultural press of the first half of last century? Were not the farm papers disseminating useful agricultural information and inspiring their farm readers to appreciate farm life and to dignify and ennoble their calling? In reply one may ask what could a farm paper then do to advance agriculture under the circumstances? The Indiana farmers of the twenties and thirties of last century and much later were not seeking or contributing agricultural information, and hence the farm papers could give out little knowledge of value to agriculture that was not already possessed by at least the leading farmers. There were then no private or public experiment stations, the results of whose work could be published. Then, too, the experience of even the best farmers of the early period was too short and its lessons too uncertain to be spread abroad on the printed page. The farmer wanted the news rather than prosy disquisitions on the independence and beauty of farm life. The more sensational the news, apparently, the more it was relished because it diverted the mind from the dull monotony of the daily routine. This statement is aptly illustrated in an issue of the Indiana Farmer in the early twenties of last century,

An illustration of a general purpose tractor adapted to the medium sized farms of Indiana. This tractor is in use in the state in drawing four-row corn cultivators, and other tillage implements and harvesting machinery. It is also adapted to the various kinds of farm stationary service.

the front page being largely given to an account of a murder trial in the east.

Indiana Farmer—The Indiana Farmer of that early day was a farm paper largely in name only, and this was doubtless equally true of other early farm papers. Let us not blame the editors of these early papers. Like the traditional fiddler they were doing the best they could, and were glad to receive almost any farm products in payment of their bills against delinquent subscribers.

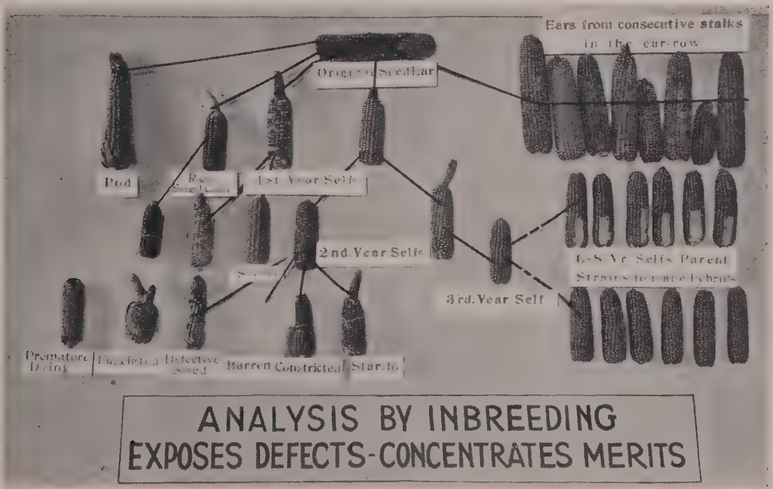
Gov. Wright's Opinion—To show that the foregoing is not a fancy picture, we quote from the address to Governor Joseph A. Wright delivered before the Wayne County Agricultural Society in 1851: "It is said that the press of the country is a good index to the people. If this be true, agriculture is in poor keeping and at a low ebb. You will rarely pick up a paper in which will be found an article on agriculture or mechanics. If there is one occasionally from the Plow, Loom, and the Anvil, or other agricultural work, it is placed on the fourth page in some obscure corner, never designed to be read; while the leading editorial articles are filled with the prospects of this or that man for office, some circus puff, or the peculiar good qualities of some coffee house, or ice cream establishment. It is not strange, that the conductors of the press should for a moment suppose that it is more important for their readers to be advised of the prospects of this or that man for Governor or Congress, than to inform them of the improvements of the day in labor-saving machinery, the propriety of changing crops, etc., etc. The fault is not with the editors alone. The people, the mass of our people are not sufficiently alive to their true interest; the proper spirit is not abroad in the land."

College Land Grant Tardily Accepted—When we remember that much of the agricultural matter given out in the last mid-century period had comparatively little value for the "dirt farmers", was not buttressed by an array of incontestible facts, nor thoroughly wrought out and tested in the school of experience, we are not surprised at the tardy acceptance by the State of the Congressional land grant of 1862, known as the "Morrill Act", for the establishment of agricultural colleges. Nor are we surprised that the time limit for such acceptance had to be extended for several new or laggard states, including Indiana.

John Purdue's Donation — Under all the circumstances and in view of the conservatism of the farmers, is it to be wondered at that, when the location for the Indiana Agricultural and Mechanical College was under consideration, it was the munificent donation of a manufacturer, John Purdue—not of a farmer—which brought the institution to Tippecanoe County?

Call for Experiment Stations — Although the founding of the agricultural college for the scientific training of agricultural leaders was logically the first step in establishing the true rationale of agriculture, the more tangible and more quickly available results of experiment station work were necessary to carry conviction of the need and value of science as an aid to a truly practical and progressive agriculture.

This need was sensed and expressed by Dr. H. M. Smith at the Knox County agricultural fair in the following words: "Why should not the farming interest be allowed a bureau at the seat of government; an organ by which they (the farmers) might communicate with the councils of the nation as their exigencies might demand? Might not a pittance of the



Pure line corn breeding permits the inherent weaknesses to be separated and eliminated and the more desirable characters to be retained and used in synthesizing new strains of corn to suit special conditions. The steps taken in corn breeding experiments are graphically shown in the above diagram.—Courtesy Botanical Department of the Experiment Station.

nation's treasure be appropriated to establish and carry on an experimental farm in different states, where experiments, which exceed the means of nearly all the farmers, might be made with agriculture and with animals?'"[1]

Experiments Advised — The keynote of one type of experiment station work was struck by Judge Samuel R. Perkins in addressing the third annual fair of Marion County in these words: "Do you wish to know whether drilling in wheat or sowing it broadcast will be attended by the better crop? Try the experiment. Would you know whether 'Poor Richard's' maxim 'plow deep while sluggards sleep and you'll have corn to sell and to keep' be true or not? Try the experiment. Do you desire to be certain whether it is better, more profitable, to cultivate less land well or more land slovenly? Try the experiment."[2]

Leaders of Progress — We thus see that such aggressive apostles of progress as John H. Farnum, the Owens, John McClure, Caleb Mills, Henry Ward Beecher, W. H. Ragan, H. M. Simpson, Joe A. Burton, C. M. Hobbs, E. Y. Teas, Sylvester Johnson, I. D. G. Nelson, Dr. A. C. Stevenson, J. D. Williams, Sol. Meredith, Joseph A. Wright, Dr. R. T. Brown, Adams Earl, James Riley, I. N. Barker, James A. Mount, H. F. McMahan, J. G. Kingsbury, J. J. W. Billingsley, John B. Conner, Ben F. Biliter, L. B. Clore, Mrs. Virginia C. Meredith, and many others, at different periods and in their several spheres of influence, were getting in their good work. By precept and example they were injecting the ferment of new thought which was slowly but surely leavening public sentiment in favor of wider intelligence and higher standards of living on the farm and making possible a more scientific, more practical, and more successful pursuit of agriculture.

Purdue's Small Beginning — After many delays due to differences of opinion and the clash of conflicting interests, the doors of Purdue University were opened to students in March, 1874. Although the institution was founded primarily to give instruction in agriculture and the mechanic arts, the special schools of agriculture and mechanics were not established until the fall of 1879.

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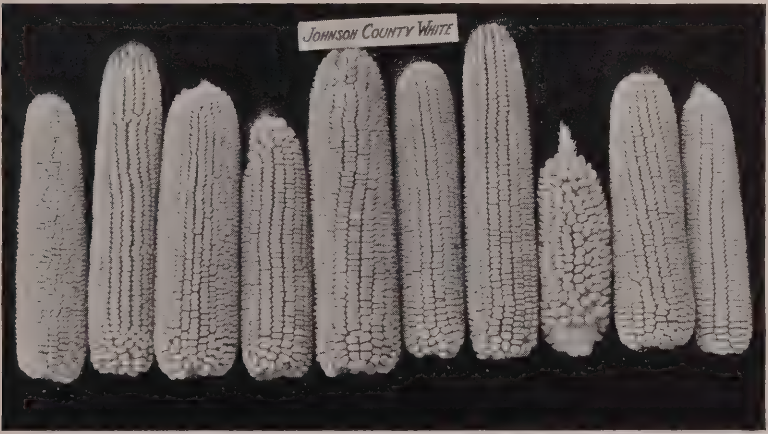
[1] Report of the State Board of Agriculture for 1852, p. 180.
[2] Report of the State Board of Agriculture for 1854-5, p. 392.

The School of Agriculture—For the three school years, 1879-1882 inclusive, Charles L. Ingersoll, the first Professor of Agriculture in Purdue, gave instruction in livestock, stock breeding, veterinary science, horticulture, market and landscape gardening, entomology, drainage, crop rotation, farm economy, meteorology, agricultural chemistry, etc. On completion of this partial course the student was given a diploma in agriculture. It was not until 1883 that a four-year course in agriculture leading to the degree of B.S. was evolved by the writer, who succeeded Professor Ingersoll in the fall of 1882. For a score of weary years the school of agriculture had an uphill time, during which it was domiciled in a small building—the first agricultural hall, since razed—which then housed both the School of Agriculture and the Experiment Station. In fact, as predicted and repeatedly urged by the Head of the School of Agriculture, it was not until the erection of the second and for the time being—really commodious agricultural hall in 1902 that the active growth of the School of Agriculture began.

Early Experiments at Purdue—The early recognition by the University authorities of the value of the experimental work to the agricultural students as well as to the farmers, is shown by the fact that Professor Ingersoll started such work



Ears from ten consecutive stalks of the open pollinated parent strain of Johnson County White which had been selected closely for ear type. This picture shows how variable the corn plant really is. It also emphasizes the need of selection and breeding to secure uniformity in the production of desired characters.—Courtesy Botanical Department of the Experiment Station.

in 1879 simultaneously with the opening of the School of Agriculture. We therefore see that Purdue, in a limited way from her own slender resources, carried on experimental work for eight years prior to its establishment under Federal auspices.

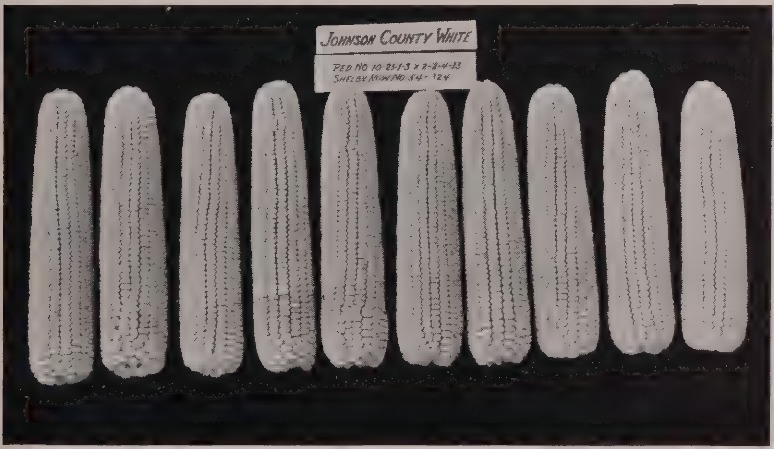
Government Experiment Stations—In 1887 Congress passed what is known as the "Hatch Act" providing for experimental and research work in agriculture, to be jointly supported by federal and state funds. Although the conditions of government aid were promptly accepted by the Hoosier solons, it was not until 1905 that the first State appropriation was made for the work. Meanwhile Purdue continued to support the Station by providing land, buildings, material, equipment, and men for carrying on the experimental and investigational work which she had begun, on her own initiative in 1879.

Purdue's Agricultural Growth—The following contrasts will serve to bring out the salient features of not quite a half century's growth of the agricultural side of Purdue University: From a single instructor in agriculture for the five years —1879-1884—to a resident and extension teaching staff of 92 in 1928; from a single agricultural graduate in 1883 to the present senior class of 50 and the undergraduate agricultural student enrollment of 369; from a single conductor of agricultural experiments in 1879-1884 to the 1928 Station staff of 115; from 50 farmers' institutes in 1889-90 to 456 in the past season, and from one county agent in 1912 to 84 in 1928, is a wide span. But it is no wider than the change in the attitude of the farmers toward agricultural education and research in the same period.

Causes of Agricultural Development—Many agencies and influences have contributed to this change in the attitude of Indiana farmers toward scientific agriculture and toward the School of Agriculture and the Experiment Station as the exponents of a rational agriculture based on the findings of science instead of the uncertain guesses of empiricism. Although some of these forces are indirect in their action, they are none the less real and potent. The last half century has witnessed a tremendous advance in invention, manufacture, engineering, commerce, and arts. There has been remarkable progress also in science and in its practical application to everyday life. Books and magazines have greatly multiplied, bringing good literature within the reach of all, and greatly enlarging the circle of general intelligence. The country at large has been rapidly advancing in material progress in which Indiana has shared. Sister states have made great strides forward in agricultural and industrial education in which our own state, with commendable pride, has tried to keep pace.

New Idea of Education—The old idea that liberal education was exclusively for the professional, leisure, and wealthy classes is now rapidly giving way to the new view that all true education of whatever grade is both for culture and for service to the community. With the increasingly prevalent dissemination of knowledge, the distinction of ripe scholarship is less a matter of remark, and the illiterate man is growing more and more lonesome in his backwardness which makes him increasingly an object of scrutiny and comment. In other words, public sentiment, against which no one can successfully contend, is crystallizing and solidifying in favor of universal education.

In view of the above-mentioned and many other forces that have conspired to usher in the era of general and vocational education, it is not strange that the farmer's earlier attitude of



Ears from ten consecutive stalks of a high yielding good quality Johnson County White Dent hybrid strain produced by breeding for disease resistance. The above picture shows what corn breeding has accomplished in securing uniformity in type of ear. The corn stalk is influenced in like manner by corn breeding.—Courtesy Botanical Department, Purdue University Experiment Station.

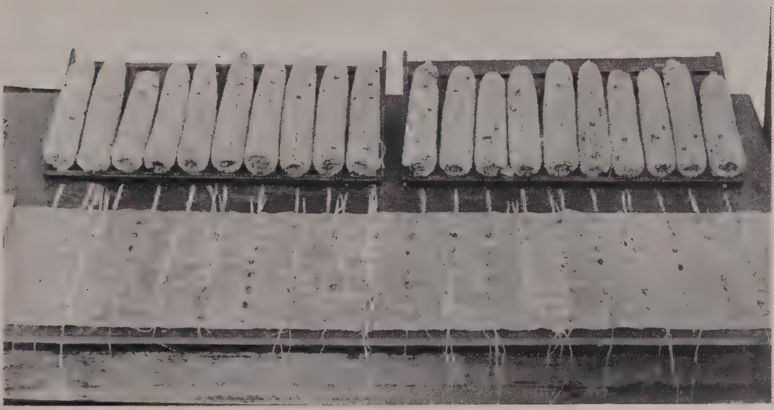
apathy, indifference, open questioning, and, in some cases, active opposition toward agricultural education, should be giving way to one of friendliness, active support, and eager desire that his family may share in the benefits of such education.

Leading Agencies—Of the several means which have been largely instrumental in promoting the development of a more scientific agriculture and the balanced growth of the agricultural side of Purdue, the following stand out in greatest prominence. These are federal aid, state aid, the State Board of Agriculture, the state horticultural society, the Indiana Corn Growers' Association, the livestock associations, the state dairy association, the state home economics' association, the Indiana Canners' Association, commercial bodies and professional men, the press of the state, and the several lines of work carried on by Purdue University for the development of a truly scientific and practical agriculture. Although several of these have been referred to on preceding pages, they, with the others named, deserve specific mention here.

Federal Support—Purdue and most of the other agricultural and mechanical colleges owe their very existence to the congressional land grant of 1862. Purdue and the state are largely indebted to the federal government for many subsequent appropriations, including those for instruction, for experiment and research, for the county agent work, for boys' and girls' clubs, for vocational educational education, and for other forms of agricultural extension. For these several purposes, Indiana is now (1928) receiving annually from the federal treasury, in round numbers, about $225,000.

Legislative Aid—The growing interest of the people of the state in agricultural advancement, and in Purdue University and the Experiment Station as means for its promotion, is broadly reflected by legislation. Although somewhat tardy in coming to the relief of the institution in its early times of need, the General Assembly in recent years has shown a commendable willingness to provide the funds needed for the training of agricultural and home economics' leaders, for the conducting of agricultural investigations, and for the several lines of agricultural extension work among the farmers of the state. At the present time the aggregate annual state support for the several agricultural and domestic science lines of work carried on by Purdue University is approximately (1928) $500,000. A considerable portion of this sum is devoted to experiment station and extension work of immediate interest and direct benefit to the farmers and farm home-makers of the state.

The State Board's Aid — For three-quarters of a century the State Board of Agriculture at its annual meetings has served as a forum for the expression of the best thought and the ripest experience in agricultural lines. At its fairs during the same period, it has given publicity to the finest achievements in agriculture, animal husbandry, horticulture, floriculture, and domestic science. Through its annual reports, covering more than a half century, it has published the addresses and essays of the leading agricultural speakers and writers of the state. It has reported regularly the proceedings of the horticultural, agricultural, and livestock associations. For many years the Board has also published annually reports of the work of the farmers' institutes, the Experiment Station, and Purdue University. In these several ways the State Board has kept before the people of the state the advanced thought and the latest results of investigation in agricultural lines and has thus made a very substantial contribution to agricultural progress.



Performance of clean and of infected seed ears of corn upon the modified rag doll germinator. This method permits the detection and elimination of diseased seed ears as well as weak and dead ears. The dark kernels are diseased.

Contribution of Horticulturists—As stated before, the horticulturists of Indiana were the first to effect the organization of a state association on their own initiative. This band of faithful men and women has uniformly and unflinchingly stood for the best in horticulture and rural life. Recognizing the value of experiment and investigation in promoting advancement, the horticultural society established in 1899 an experimental orchard and placed it in charge of "Uncle Joe A." Burton, (deceased) one of the most tireless and persistent seekers after causes and results in horticultural lines. The openmindedness and friendly attitude of the society toward investigational work was further shown by the turning over, in 1917, of its experimental orchard to the State Experiment Station. Mr. I. D. G. Nelson, for several years the president of the horticultural society, was a staunch advocate for an agricultural college, and later, a trustee of Purdue.

Support of the Corn Growers—The Indiana Corn Growers' Association has been one of the most aggressive and progressive organizations in the state. From its organization in 1900 to the present time it has sought to apply the teachings of the School of Agriculture and the results of investigational work to the production and improvement of corn. As a moulding force for advancement in agricultural lines, the Indiana Corn Growers' Association has no superior and few equals in this country.

Livestock Men Help—The livestock breeders and feeders of Indiana, by their production of domestic farm animals of exceptional quality and outstanding performance, and by their modern methods of feeding, have strikingly demonstrated the value of scientific methods of breeding and feeding. Their example has greatly helped to make popular the findings of agricultural investigations in animal husbandry lines. By so doing the leading stockmen of the state have turned the attention of thousands of farmers enquiringly to Purdue for information and advice on the problems of livestock breeding and animal nutrition.

Dairymen Lend a Hand—Probably in no other agricultural pursuit are the teachings of science and the lessons of the experiment stations more closely applied than in modern dairy practice in Indiana. Dairy sires and dams, dairy feeding rations, the methods of breeding and rearing high class dairy stock, and the plans for soil conservation while producing heavy yields of high quality feeding crops, are all now subjected to the crucial test of performance by the leading dairymen of the state. The object lessons afforded by these up-to-date successful dairymen are just so many incentives to their neighbors to fall into line in the forward march of agricultural progress.

Canners Boost—The Indiana Canners' Association, though limiting its activities to the improvement, in yield and quality, of canning crops, is doing much for agricultural advancement. In its intelligent and effective cooperation with the state experiment station, the association has already accomplished a marked improvement in the tomato, made an important contribution to agricultural advancement, and brought Indiana into the front rank of tomato-growing states.

The Press Promotes Progress—The omission of agricultural matter from the pages of the newspaper press in 1850 and later was really a natural reflection of the sentiment of the farmers themselves, and not an intentional neglect of agriculture. With the early apologetic attitude of the farmer and his

B. H. Duddleston, of the U. S. Department of Agriculture, who developed the modified rag doll at the Purdue University Agricultural Experiment Station, shown reading a germination test in a community testing plant at Shelbyville, Indiana.

low estimate of his calling, it was not at all strange that agriculture then received slight mention in the general press. All that is now changed. Practically every paper in the state now has its farm column or farm page in which the stories furnished by the agricultural news service of Purdue are regularly published along with much other matter relating to club and county agent work, the demonstrations of the extension specialist, the investigations of the experiment stations, etc. The press of the state and of the country is now doing a great work in directing attention to agriculture and is helping to give this foundation industry its rightful place in public esteem. The publicity thus accorded to agriculture by the press of Indiana is creating a congenial atmosphere for the reception of new ideas and the latest findings of agricultural science, in which the teacher of agriculture, the extension specialist, and the station worker can render their most effective service to the farmers of the state.

Business Men Cooperate—As stated earlier, professional men, especially judges, rendered active service in the farmers' institute work, by helping to effect organization, giving their courtrooms for meetings, presiding at the sessions, and participating in the discussions. The merchants also rendered very substantial assistance by furnishing places for the meetings and helping to advertise them. In recent years the bankers, chambers of commerce, and merchants have heartily and effectively cooperated in arranging for various short courses, supporting boys' and girls' club work, and contributing premiums for various agricultural and domestic exhibits. The steam and electric railway lines have also rendered signal service in running corn, dairy, fruit, soils, livestock, home equipment, and other special agricultural trains. A large contribution has thus been made to the advancement of practical agriculture. It would indeed be difficult to overestimate the value of this service in helping the rank and file of the farmers of Indiana to a more adequate and, hence, to a juster, appreciation of the importance of agriculture to all classes of our people.

Bright Prospect—Notwithstanding the various retarding influences, the several causes operating to promote advancement have achieved a degree of agricultural improvement and rural life betterment which is highly gratifying. And the increasing predominance of the factors of progress justify bright hopes for the future of Indiana agriculture.

CHAPTER XIX.

THE DEVELOPMENT OF SCIENTIFIC AGRICULTURE IN INDIANA

PURDUE'S SHARE—That Purdue University has had a large share in Indiana's agricultural advance in the last half century will be readily granted by the well informed farmers of the state. In the order of their development the three major lines of Purdue's agricultural activities are (1) teaching, (2) investigation, (3) agricultural extension.

Agricultural Extension—The prominent features of the agricultural extension work include farmers' institutes and district short courses; vocational training and boys' and girls' clubs; county agent work and special agricultural trains; scores of demonstration farms and thousands of demonstration lectures on agricultural subjects by the extension specialists; the combating of animal and plant diseases; various control measures, such as holding weeds in check and eradicating wild garlic, poisonous weeds, and the common barberry.

Station Work—The Experiment Station, by its scrutiny of facts, its quest for their causes, and its search for governing principles and natural laws in their application to practical agriculture, is furnishing essential and invaluable data for both the teaching and extension staffs of the University. The investigator has learned that even facts are elusive things and that tracing and isolating their causes and their applications to productive agriculture even under laboratory control, and determining the logical order of agricultural processes under the ever-changing conditions of soil, climate, and environment is often a task requiring keen observation, skillful manipulation, and patient study for days and months and even years for its accomplishment. It follows that the work of the experimenter and investigator is usually unobtrusive and even obscure, although the results of their labors are often of fundamental and far-reaching importance.

Lines of Research—The work of the Agricultural Experiment Station comprises investigations in the chemical, physical, and biological laboratories; soil surveys, drainage, and terracing; experiments with soils, manures, fertilizers, grains, fruits, and forage crops; feeding experiments with cattle, sheep, swine, and poultry; studies of disease of plants and animals; and tests to determine the nutritive value of the various home grown and commercial feeds for meat and milk producing animals.

Departmental Cooperation — In certain investigations as, for example, a study of the vitamins in their relation to animal nutrition, the cooperation of two or even three departments of the experiment station is sometimes necessary.

Determining Adaptability — Then, too, the patiently wrought-out results of the laboratory must often be subjected to actual field, feeding and housing conditions to determine their adaptability in general farm practice. Frequent repetition and duplication of experiments are also necessary before their lessons can be reduced to rules for the guidance of the actual farmer.

Investigation Aids Teaching — To give the emphasis of authority to their teaching, the classroom and the extension instructor must both drink deep at the wells of knowledge

This picture shows a vigorous bush of the native barberry, *Berberis vulgaris,* growing close to a field of wheat which was seriously damaged by rust. Farmers should learn to identify and then destroy this shrub because it harbors the spring or æcial stage of the black stem rust which causes serious losses in the wheat crop.—Courtesy Department of Botany of the Experiment Station.

sunk by the investigator in the bed rock of hidden or partially revealed agricultural truth.

While most of the investigational and experimental work is along the line of verification, the Indiana Experiment Station has had its share in the discovery of new truths and in their practical application to the problems of agriculture.

Work of the Experiment Station—Some of the more important contributions of the Experiment Station to agriculture are given in the following paragraphs:

Control Laws Drafted—The fertilizer and feed control laws of Indiana, drafted, amended, and judiciously administered by the state chemists of Purdue, have not only afforded valuable protection to Indiana farmers, but they have also served as models for other states.

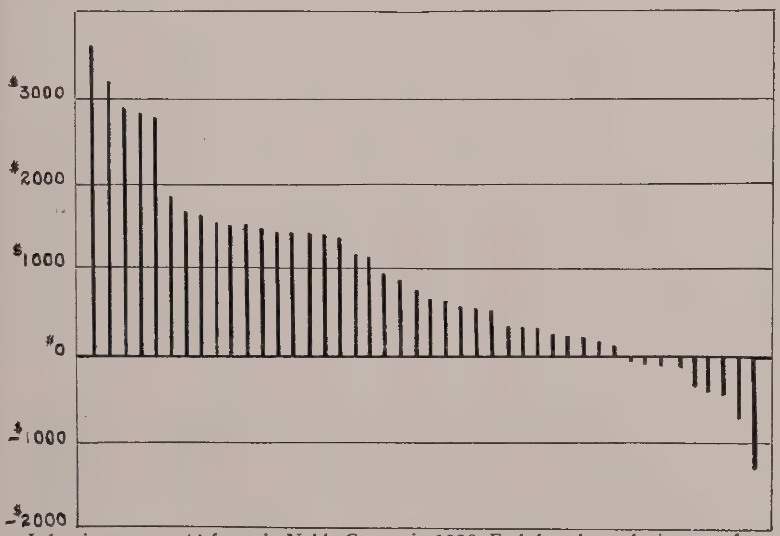
Corn Plant Studied—Intensive research work on the chemical composition of the corn plant in different stages of its growth has thrown much light on the vital processes of this cereal and given valuable suggestions as to the food requirements of the corn crop.

Soil Betterments—Chemical analyses have indicated and field trials demonstrated that certain infertile muck soils and apparently rich, but non-productive so-called "bogus", soils are made immediately productive by drainage and the use of a potash fertilizer. In view of the fact that Indiana has over 3,000,000 acres of muck soils, the importance of making them productive is at once recognized. The value of applications of lime to the dark unproductive acid sand soils of the Kankakee Valley and to other acid soils of the state, aggregating many millions of acres, has been amply demonstrated by the results in crop production. By carefully conducted experiments in drainage, fertilization and cropping, feasible and profitable methods of rendering productive the "slash" lands of southeastern Indiana have been fully demonstrated.

Crop Improvement—In the line of crop improvement the notable examples are the establishment of alfalfa and soybeans as important field crops for the state, and the development of the Dunfield soybean and the hardy, prolific Purkof and Michikof wheats.

Plant Disease Control—The value of formaldehyde as a fungicide for the control of potato scab was first discovered by the Indiana Experiment Station which has since demonstrated that this remedy will also control the smuts of oats, thus making possible the savings of millions of dollars to the farmers of the state. Laboratory and field studies of the leaf rust of wheat have resulted in substantial gains in the knowledge of rust resistance in wheat, thus paving the way for some measure of rust control. The discovery that a bacterial disease and leaf mould of tomatoes are seed borne has led to the development of a practical method for the control of the former through seed treatment. The establishment of the relation of leaf petiole infection to canker development of apple blotch has suggested a practical control measure including proper spraying and canker eradication in young orchards.

Achievements in Corn Breeding—A series of investigations on the food needs of the corn plant, coupled with numerous field studies of crossbred and inbred types of corn has resulted in the development of a number of uniform, prolific strains of corn that are resistant to "corn root rot", which has been taking heavy toll on soils deficient in available phosphorus. Although these studies are being continued through field tests in various parts of the state, the progress made thus



Labor incomes on 44 farms in Noble County in 1928. Each bar shows the income of one farmer. Nine men failed to make five per cent interest on their capital while five others made more than $2500 above interest. The differences in income are the result of differences in methods used in managing the farms. The labor income is what each farm earned above 5 per cent interest on the investment.

far suggests the posible saving of millions of dollars by growing these recently developed disease-resistant strains of corn.

Horticultural Investigations—Probably the thing of most interest to florists and vegetable gardeners is the development at Purdue of the unit method of steam sterilizing for hot beds or greenhouses at one time. This prevents the recontamination incident to the older methods and is now quite generally used by florists and gardeners.

The Tomato Improved—The development of the Indiana Baltimore tomato (previously referred to), through the cooperation of the Indiana Canners' Association with the experiment station, is a notable achievement of great economic importance to tomato growers and canners. The transplanting of melon and tomato plants one or more times has been shown to be a profitable practice.

Orchard Studies—Continued studies in orchard management at Indiana substations have thrown much light on the effect of different systems of orchard culture on growth and production, and on the influence of cover crops and fertilizers.

Pruning Modified—Studies in pruning of fruit trees, in which Purdue has shared, show that heavy pruning reduces size and delays bearing in the young trees. It has been demonstrated that there should be only enough pruning to give the tree the form desired.

Apple Yields Increased—The renovation of an apple orchard near Bedford by the experiment station has increased the yield from 200 to 9,000 bushels. The testing of seedling fruits in the experimental orchard at Mitchell is discovering the valuable sorts and eliminating the inferior kinds.

Orchard Management—On a carefully selected site near the experiment station, apple, peach and small fruit plantings are being established for the study of fruit problems and the demonstration of good methods of orchard management.

Fruit Sprays Compared—Experiments to date (1934) with the fruit sprays have shown that dusting is not as effective as liquid spray in controlling either curculio and codling moth or scab and fungous diseases.

Farm Business Improved—The most important research work in relation to farm management has emphasized the four prime factors of profitable farm production: namely, size of business, crop yields, returns from live stock, and efficiency in the use of labor. Compilation of the records of hundreds of Indiana farms covering a period of over 25 years shows that where all four of these factors are advantageously employed the labor income has been increased 185 per cent over the average of the area under consideration. Perhaps the most original as well as the largest economic contribution to Indiana agriculture in the line of farm management is the preparation and distribution of nearly 5,000 farm leases and over 80,000 farm record books. The significant feature of these leases is that they provide equitably for the interests of both land owner and tenant and insure also a square deal for the farm.

Feeding Methods Improved—For nearly a score of years the Indiana Experiment Station conducted cattle, hog, and sheep feeding experiments to determine the value and proportion of leguminous hay, corn silage, protein concentrates, and home grown proteins in the ration. These feeding experiments to 1928 were made on more than 1,800 cattle, 5,000 lambs, and 7,500 hogs.

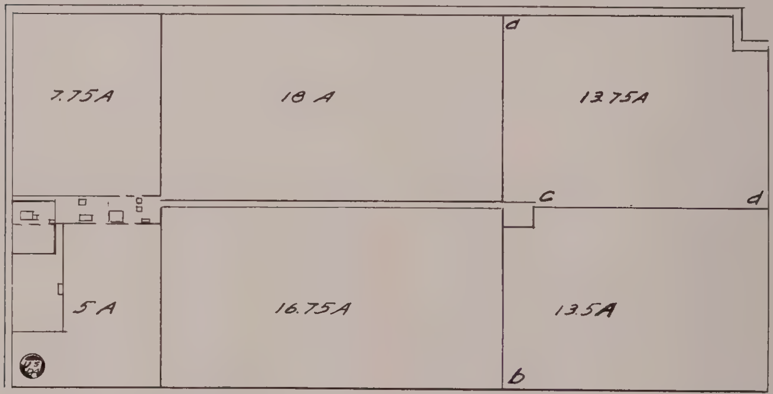
Results With Cattle—The cattle feeding has shown that leguminous hay is approximately 1/3 more efficient than non-leguminous roughage; that corn silage is the most economical roughage under present Indiana conditions; that protein concentrates add to the rate of gain and also to the selling value of the cattle; that home-grown supplements like soybeans are efficient; and that full rations of corn are more profitable than limited rations in fattening cattle. The average price of corn at Lafayette during these feeding experiments (1905-1924) was 72 cents per bushel. When fed to cattle, this corn proved to be worth $1.07 per bushel after allowing market prices for the roughage.

Results With Lambs—In lamb feeding the results have been much like those with cattle. The value of leguminous hay has been specially emphasized in lamb feeding. Silage has proved not quite as economical with lambs as with cattle. These feeding trials have shown that one of the best rations for fattening lambs consists of seven parts corn, one part cotton seed meal, with leguminous hay and corn silage for roughage.

Swine Feeding—In the hog feeding trials at Purdue, including annually over 600 hogs and covering a period of 25 years, two leading objects have been kept in view: (1) In fattening hogs, how to get the largest gain from a bushel of corn, and (2) how to prevent the enormous losses in young pigs, amounting to 30 per cent, and even 40 per cent on Indiana farms. In dry lot feeding, corn produced a gain of 10 pounds per bushel, but when supplemented by digester tankage (first fed at Purdue), corn made a gain of 14 pounds per bushel.

The Ton Litter—A decided impetus has been given to economical swine production through the ton litter project which was started by the Animal Husbandry Department of Purdue University in 1922. There were 41 official ton litters in the state in 1928, the highest record for that year being made by John F. Allen of Sullivan County with a litter of eleven pigs which weighed 2954 pounds at six months of age.

Soybean Supplement—Owing to the inadequate supply of tankage, or of milk which was found equal to tankage in supplying protein, attention was turned to soybeans as a possible protein supplement to corn in the hog fattening ration. Numerous trials, covering 19 years, resulted in the discovery that



Shows the arrangement of a highly successful 80-acre farm in Central Indiana on which the owner was following a 3-year rotation. Being handicapped by having four fields for cropping, the owner, at the suggestion of the Department of Farm Management of Purdue, rearranged the farm as shown in the next diagram.—Reprinted by permission, from Farmers' Bulletin No. 1421, U. S. D. A.

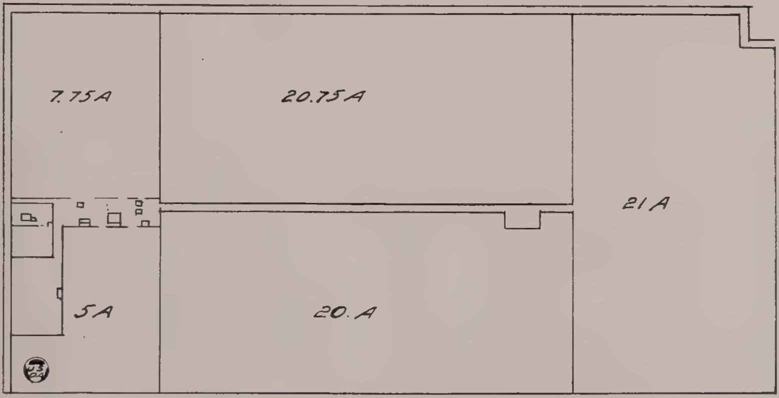
certain minerals are needed to secure profitable returns from feeding corn and soybeans.

Mineral Mixture — When a mineral mixture supplying lime, phosphorus, and salt was added, soybeans as a supplement to corn in the hog fattening ration proved a satisfactory substitute for tankage. Thus an abundant home-grown protein supplement (soybeans) became available and the profitableness of this soil-renewing crop was greatly increased.

The results of these long-continued feeding experiments at Purdue are an outstanding contribution to feeders of meat-producing animals throughout the country as evidenced by their almost universal adoption by practical feeders and their wide approval by the animal husbandry investigators.

Poultry Problems Solved — The poultry investigations carried on by the state experiment station have kept Indiana fully abreast of poultry progress in other states. The experimental studies have included poultry feeds; animal and vegetable protein in the ration; cost of egg production; temperatures in incubation; effect of electric light in egg production; and rearing chicks in confinement.

Every conclusion reached has been buttressed by demonstrations on many farms of the state. Some of the findings show that protein has a high value in the ration; that the vegetable



The same farm as in preceding diagram with three nearly equal fields for the 3-year rotation. The water supply shown by the small rectangle in the corner of the 20-acre field is still available for the three fields in the rotation. The revised plan cuts out one line of fence and permits the growing of a nearly equal area of each crop every year. Reprinted by permission from Farmers' Bulletin No. 1421, U. S. D. A., which gives several other plans for re-arranging 80-acre farms.—Redrawn by the Department of Agricultural Engineering, Purdue University.

proteins in soybean oil meal, when supplemented by a mineral mixture of salt, acid phosphate, and ground limestone were practically equal to the animal proteins in tankage; that a proper proportion of protein in the ration increased egg production and reduced the cost of eggs; that protein, minerals, and vitamins are essential in the rations for young chicks; and that by trap-nesting, recording pedigrees, and study of the hatchability of eggs, the important factors of successful poultry breeding are discovered and made available for the improvement of the poultry flocks of the state.

Dairy Methods Improved—The research work at Purdue University in dairy lines has helped to standardize methods in the use of the Babcock test for butterfat, in the production of evaporated milk, in securing a uniform moisture content of butter, in cream grading, and in determining adulteration of butter. Work on the cause of "sandiness" in ice cream has resulted in the development of a remedy for this defect. An Indiana butter survey has revealed common controllable faults in the making of butter.

Feeding and Rearing—Better methods of feeding, breeding, and rearing dairy stock, demonstrated by the experiment station, have added greatly to the profits of those dairymen who have used them. Elaborate investigations at Purdue by the dairy chemists have supplemented research work elsewhere in discovering the factors that cause deterioration of butter in storage. The several lines of dairy investigation have not only aided the practical dairyman and the dairy manufacturer, but they have also helped to standardize the methods of the dairy laboratories of the country.

Disease and Pest Control—Investigations looking to the prevention and control of animal diseases and of the insect and other pests of the crop have been systematically carried on for years at Purdue. The results obtained make possible a very substantial contribution to the prosperity of the farmer and stockman.

Animal Diseases—The research work of the experiment station has made available methods for the control and eradication of hog cholera, dysentery in swine, anemia in young pigs, paralysis in poultry, and bacillary white diarrhea.

"Trembles" or "Milk-Sickness" — Wherever outbreaks of the disease called "trembles" in domestic animals or "milk-sickness" in human beings has been reported, field studies in Indiana and elsewhere have shown in every case the prevalence, in woods pastures, of the plant called white snakeroot (Eupatorium Urticaefolium). The eradication of this weed or the shutting off of infested pastures has uniformly resulted ing Purdue's instructions for preventing and combating animal diseases are reaping a rich reward in the health and profitableness of their herds and flocks.
in the subsidence of the disease. As this disease often proves fatal to both man and beast, the importance of the repeated demonstration by the experiment station of the relation of white snake root to the disease cannot be overemphasized. Since "forewarned is forearmed", the farmers in the timbered sections of Indiana and of other states now have it in their power to exterminate this disease which often took heavy toll of health and life in the past.

The farmers who are intelligently and faithfully follow-

The first Agricultural Hall of Purdue University built in 1881. It contained two offices, an agricultural museum, a class room, and rooms for seeds, supplies, and tools. A rear wing afforded temporary storage for the crops grown on the small experiment plats. This building was later enlarged to provide laboratories for the experiment station, and finally razed to make way for the present Experiment Station Building.—Illustration taken from the annual report of Purdue University for 1882.

Insect Control—The research work on injurious insects, carried on independently by the Indiana experiment station or in cooperation with the federal entomologists, has resulted in the development of control measures for many destructive insects of field, orchard, garden, greenhouse, and dwelling.

The following is a partial list of the injurious insects for which control measures have been discovered or made practically usable by the farmer, horticulturist, and stockman: San Jose scale, peach tree borer, codling moth, cabbage root maggot, squash vine borer, striped cucumber beetle, Mexican bean beetle, greenhouse centipede, cottony maple, elm and oyster shell scales, Hession fly, grasshoppers, cut worms, white grubs, stored grain insects, and animal parasites, including feather mites and cattle flies.

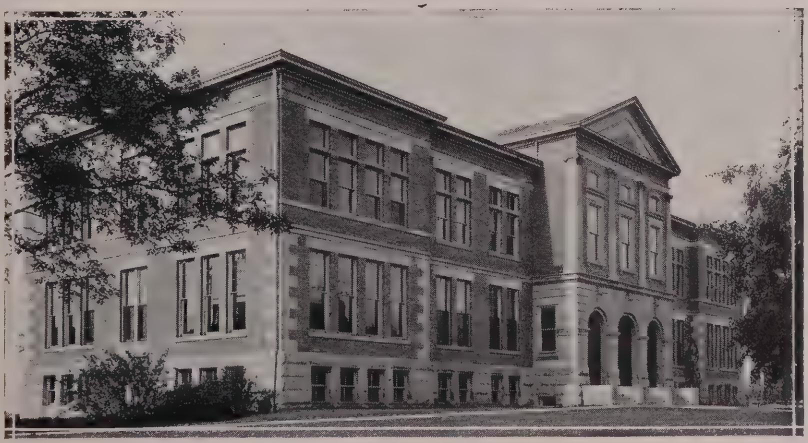
Rodent Pests—In cooperation with the U. S. Biological Survey, practical and effective control measures have been demonstrated for rats, field mice, and groundhogs. The first insect school was inaugurated by Purdue in 1926. Beekeepers' short courses were also inaugurated and boys' and girls' insect collection contests developed.

Publicity Provided—By means of exhibits at the state fairs, radio talks, lectures, and the press, as well as by leaflets and bulletins, useful information concerning insects is broadcast over the state. Timely warnings are also given of the approach of destructive insects, with tested measures for preventing or checking their ravages.

Money Value of the Station—It is of course impossible to estimate accurately the money value of Purdue's agricultural investigations to the farmers of Indiana. However, it is speaking well within bounds to say that the annual saving or increase in returns from crops and livestock made possible by the research, experimental, and demonstration work of the experiment station is greater than the total cost of all departments of Purdue University from its beginning to the present time.

That the experiment station is doing a great work in discovering or verifying the principles of successful agriculture, and that the extension department is rendering a large service in showing how the lessons of science may be profitably applied in every day farm practice will be readily conceded by those farmers who are the direct beneficiaries.

School of Agriculture—That the school of agriculture is also doing a great work for the farmers of Indiana may not, at first, be so apparent. It should be remembered, however, that while the station and extension workers are dealing with matter, the school of agriculture is preparing men who are to control matter and harness nature's forces, both animate and inanimate, for the service of man. More than this, the school of agriculture is training men to become the inspirers and leaders of other men in the great wide field of agriculture. Purdue agricultural graduates are not only demonstrating on their own farms the methods of successful agriculture, but they are also becoming community leaders who are helping to lift agriculture to its rightful plane among the callings of men. Carefully compiled statistics show that, of the 1487 graduates of the Purdue School of Agriculture, 36 per cent are farming. As many more are doing experiment station and extension work, or serving as teachers of agriculture, horticulture, dairying, animal husbandry, etc. Fourteen per cent are engaged in lines closely related to agriculture, with fertilizer companies, packing plants, feed and seed firms, etc. In other words, 86 per cent of these graduates are actively engaged in the several agricultural and closely related pursuits for which



The present Agricultural Hall of Purdue University was built in 1901. This building provides the office of the Dean of Agriculture, offices of instructors, classrooms, and laboratories for agricultural students.

they were specially trained. Although complete statistics are not yet available, it is believed that fully 90 per cent of the former non-graduate students of the school of agriculture are engaged in agricultural pursuits.

Agricultural Graduates—Some of the agricultural graduates have already become accredited master farmers because of the contribution they have made to practical agriculture, to the farm home, to the country church and school, and to the rural community. Other agricultural alumni are doing fine work in agricultural education and investigation, agricultural journalism, and in other lines of scientific agriculture.

Unlike the students of the other schools of Purdue, who scatter widely over this country and go into many other countries as well, most of the former students of the School of Agriculture remain in the state as a permanent asset to Indiana agriculture.

In view of the good record made by its former students, may we not regard the product of the Purdue School of Agriculture as the crowning work of the University in behalf of agriculture? In view also of its growing material equipment and the increasing number and efficiency of its teaching staff, may we not rightfully expect that Purdue's School of Agriculture will continue to turn out an unbroken succession of scientific farmers and public-spirited agricultural leaders who will help to put and keep Indiana among the foremost agricultural states of the Union?

Opinions of Farmers—In closing this chapter on the development of scientific agriculture in Indiana it seems fitting to quote the views of actual farmers and farm managers as to the value of the work of Purdue University in agricultural lines. Those whose views are given have an unusual opportunity to learn what Purdue is doing for agriculture and to judge of the value of its work:

W. H. Senour—Mr. W. H. Senour, a prominent farmer, farmers' institute speaker, and bank director, of Brookville, Indiana, makes the following concise but comprehensive statement:

"I look upon the agricultural school, the experimental work and the extension forces as a great organization for discovering, collecting and distributing truth. I cannot afford to experiment. I look to the agricultural school for the latest known truth, and try to follow it rather closely. The results have been very satisfactory."

Maurice Douglas—The following is from Mr. Maurice Douglas of Flat Rock, Shelby County, a farmers' institute speaker, who began farming for himself as a renter:

"Mr. Herman Stewart, a banker of Hope, Indiana, tells me that his business with twelve former students of Purdue University shows them to be the agricultural leaders in their respective neighborhoods."

"The experiments have done more for Indiana agriculture than all the other agencies combined. The station tackles our problems and solves them and thus lightens the load of the hard-working farmer."

"It has shown us how to combat the Hession fly, hog cholera, tuberculosis and contagious abortion. Although a few pioneers antedated the experiment station in the work of livestock improvement, the first state-wide attempt to better the livestock came with the experiment station."

"The farmers' institutes spread the work of the Experiment Station and the school of Agriculture better than all the bulletins."

Guy Cantwell—The following is from Mr. Guy Cantwell of Gosport, a member and ex-president of the State Board of Agriculture, a farmer and a farmers' institute speaker:

"Prior to the establishment of the Agricultural Experiment Station no research work was done as farmers can not afford to do such work. The experiment stations might well have been called research laboratories, because of their investigational work. The data obtained from the central station at Lafayette, supported by the results secured at the several substations and demonstration farms, and the dissemination of this information by the Extension Department are convincing the farmers of the practical value of research and experimental work in developing the agriculture of the State."

"The school of Agriculture was a forward step but the achievements of the Experiment Station were necessary to demonstrate its value. But for the work of the Experiment Station and the Extension Department in disseminating the knowledge of better methods of soil practice, livestock management, farm finance and community improvement, the agriculture of Indiana would be in a sorry condition."

"The spirit of Purdue is service, and the farmer who, thus aided, does not leave his farm in better condition for those who follow, is indifferent to the best interests of those who are dearest to him."

R. A. Ogg—Mr. R. A. Ogg of Greencastle, for many years a superintendent of schools and later a farmers' institute speaker, as well as a farm manager, offers the following testimonial:

"During the eighteen years of my travel over the state in institute work, I have always found those who had attended Purdue as leaders in farm activities. Frequently, though the younger men of the community, they have been acting as officers of the institutes in very effective manner."

"The work of the Experiment Station has been of untold value in giving the farmers, not opinions regarding soils and crops and feeds and fruits, but the results of demonstrations. I myself greatly profited in my earlier experience with my own farm, by the answers to inquiries I rather frequently made, and in later years with my orchard, I have been accustomed to look to the horticultural department of Purdue University for guidance."

The Agricultural Experiment Station Building was erected in 1908. In it is found the administrative offices of both the Agricultural Experiment Station and Agricultural Extension Department. Offices and laboratories of Agronomy Department, Botary Department and State Chemist are also located in this building.

"During these eighteen years I have noted a very marked advance in the agricultural intelligence of the people commonly. The discussions by members of the institutes have been freer and of a higher order than in the earlier years. Speakers might talk on higher levels and be assured of sympathetic interest. The mere fact of bringing the people together, to think together regarding their interests, has been of great value. The short courses have sent farmers and their families to school to actually study, and have begotten in them more of the student habit of mind."

"I regard the club work as of the highest value in giving the aspiring boys and girls something for which to strive; and the visits of wise men to Purdue have given them larger views and the results of valuable experience."

"County agents are doing a fine work in correlating these other agencies and organizing farm activities. The Farm Bureau could not have attained its present position of influence but for the good work of these enthusiastic and earnest leaders in the spirit of cooperation."

William Madigan—The following statement is from Mr. William Madigan of Veedersburg, a former member of the state legislature, an ex-teacher, a promoter of boys' and girls' club work, a farmers' institute speaker and farm manager:

"Having been actively engaged in farming all my life, it has been my greatest interest to note the marked changes in agricultural practices since my first introduction to the pioneers from the Purdue School of Agriculture."

"One of the most difficult tasks for the men and women who were advancing the principles of scientific agriculture, was overcoming antagonism to the new order and eradicating the zealous tenacity to cling to unfounded theories."

"I well remember when the local papers in our county treated the representatives from the Agricultural College with little respect; but today no greater local force for the application of truths founded on experimentation, exists than our local papers. The press, both local and state, has changed from indifference to a most powerful agency for producing an intelligent attitude in the public mind in regard to scientific agriculture."

"The public school has experienced a most wonderful change in its spirit, curriculum and achievements, through its contact with the University and its alumni. The rural school has come to realize that its future depends wholly upon the application of science to soil management, crops, and animal husbandry."

"The value of land for taxation, in places in Fountain County, has been increased from fifteen to three hundred dollars per acre by the development of orchards treated scientifically."

"Many herds of dairy cattle have been changed from liabilities to assets through the activities of county agent, vocational agriculture teacher, and cow-testing associations. These agencies are using applied arithmetic in balancing rations, weighing milk, and keeping cost, and profit and loss accounts. They are using applied science in breeding, feeding and maintaining the health of the herd. In other words they are paying for their schooling by applying science to the development of farm resources."

"The Extension Department of Purdue University has fostered the Corn Growers' Association for years. By the application of the principles demonstrated by the members of this association, Indiana has become nationally recognized as one of the great quality and quantity per acre corn states, and her wealth has thus been increased by millions of dollars. The ton litter project, originated and directed by the Animal Husbandry Department, has brought profit to many farmers in Indiana, and prosperity to the communities where its lessons are applied, because every line of its theory is based on research, science, truth acquired and applied at the Experiment Station."

"The poultry industry in Indiana has been changed by the University, through its demonstration and extension work, from a guessing game to almost an exact science, bringing profit and prosperity to thousands of homes."

"As I see it, the permanent prosperity of agriculture and the perpetuity of our institutional life, rest with the leadership of our Land Grant Colleges and our unswerving loyalty and abiding devotion to that leadership."

C. C. Fisher—The following brief statement is from Mr. Cecil C. Fisher of Winchester, president of the County Farm Bureau, a farmer and a farmers' institute speaker:

"While there always has been and probably always will be a few farmers who discover and develop some interesting farm practices, the Purdue experiment station is the major factor in developing progressive agriculture in Indiana. Its many lessons are carried out to the farmers through county and demonstration agents, farmers' institutes, short courses, experimental plots, demonstration farms, boys' and girls' club work and prizes awarded at the different exhibits. I really believe that our agriculture would be, today, in a state of chaos but for these several agencies of agricultural progress."

Addison Drake—The following is from Hon. Addison Drake, a farmer of Sullivan County, a farmers' institute speaker, and a member of both houses of the General Assembly:

"Through the alumni and former students of the Purdue School of Agriculture much good has come to Indiana. The experiment station has been the source of great benefit to the farmers of the state. I really think, however, that the extension department, with its multiplied personal contacts with farmers, is doing more for agriculture than the other departments of Purdue. The demonstrations of the extension force carry conviction to the minds of the farmers and clearly show how farm practice can be improved."

Mrs. Virginia C. Meredith—The following statement is from Mrs. Virginia C. Meredith, for many years a farm manager, farmers' institute speaker and incisive writer on topics relating to agriculture, the farm home and community. As a trustee of Purdue, she is well qualified to give an intelligent opinion of the work and influence of the institution in promoting advancement in agriculture and the improvement of the rural home and community:

"The earnest and unmistakable response of farmers to work in agricultural extension carried on by Purdue University was in an eminent degree due to a factor sometimes overlooked. I refer to the attendance of women at the very first farmers' institutes which were held in the state. Among early institute speakers it was a subject of frequent comment that many women should with interest and patience sit through programs devoted to grain and livestock. Naturally, this attendance and interest meant discussion, later, at home of both subject and speaker. Most speakers were shrewd enough to make an appeal to these alert farm women. The dairy and poultry formerly were almost exclusively the concern of farm women and of course, any instruction pertaining to these two subjects was understood and used. Very probably in no other two lines has the influence of the Purdue guidance been more marked."

"Long before Home Economics became a subject of instruction, farm women attended institutes and appropriated whatever pertained to the farm home, the farm family and farm income, so they were ready and eager to hear those speakers who came later to discuss, first, Domestic Science and afterward, Home Economics. Purdue University was somewhat slow in developing a Department of Home Economics, but the response of the state to this work has been gratifying and growing until now every public school includes some such instruction, with a marked preference for Purdue graduates as teachers."

"A fact often overlooked in the estimate of the value of the Land Grant College is its recognition and encouragement of co-education. This plan of college administration made a strong appeal to farm folk and so enlisted their sympathy and approval that agricultural extension, as projected and man-

This is a picture of the Indiana "Home Special" train which was operated over the New York Central lines in Indiana from March 15 to April 16, 1920. The train was equipped with modern water, lighting, and power systems suitable for the farm home. At every one of the 86 stops, exhibits were made of kitchen, laundry, bathroom, and dairy room equipment, and suggestions given on home furnishing. The interest of the people was shown in the fact that over 30,000 persons viewed the exhibits.—Photo by J. C. Allen & Son.

aged at Purdue University, met a favorable sentiment among the farming population of Indiana."

DREAMING

By FANNIE R. BUCHANAN

My home must have a high tree
  Above its open gate;
My home must have a garden
  Where little dreamings wait.
My home must have a wide view
  Of field and meadow fair,
Of distant hill, of open sky,
  With sunlight every where.

My home must have a friendship
  With every happy thing;
My home must offer comfort
  For any sorrowing.
And every heart that enters
  Shall hear its music there
And find some simple beauty
  That every life may share.

My home must have its mother,
  May I grow sweet and wise;
My home must have its father
  With honor in his eyes.
My home must have its children,
  God grant the parents grace
To keep our home through all the years,
  A kindly happy place.[1]

Conclusion—To the farmers and farm home makers of Indiana, and to all others in the state interested in agricultural advancement whose recollection covers a half century, Indiana's agricultural progress in the last 50 years is indeed highly gratifying. The marked improvement in the quality and performance of the herds and flocks of the state; the steadily increasing number of well arranged, well kept, and prosperous farmsteads; the multiplying farm homes supplied with all the modern conveniences and most of the luxuries; the more intimate contact of the farmers with the outside world through improved highways, free rural mail delivery, the automobile, the telephone, the press, and the radio; the remarkable progress in rural school work and consolidation; the achievements of Indiana farm boys and girls in their 4-H club work; the community halls that are springing up; the growing tendency toward, and enlarging opportunity for, rural church union and cooperation; the changing attitude of the farmers toward science as the handmaid of successful and progressive agriculture, and the better understanding and mutual feeling of good will and cooperation that are developing between town and country folk—these all justify a sense of pride, a measure of complacency and sincere thanksgiving. As we survey the hills and vales and fruitful fields of this modern Hoosierland we can truthfully say, "The lines have fallen to us in pleasant places and ours is indeed a goodly heritage."

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[1] Printed by permission of the Author and of the Home Publishing Company of Grinnell, Iowa.

We do well to remember, however, that there is yet large room for further progress. There are many farmers in the more backward portions of the state who are yet to catch the keynote of progress; yet to realize the possibilities of self-help and the help of science and cooperation; yet to enjoy the comfortable and even buoyant feeling begotten by substantial material prosperity; yet to discern the finer things possible to the farm home and the rural community; yet to become inspired with the spirit of the age, and fall into line and keep step in the forward march of events.

But, in view of the encouraging progress now being made, and of the forward look of our leading farmers and their eagerness to appropriate the results of agricultural research and experimentation, we have good reason to hope and believe that Indiana will steadily keep the pace and continue to rank among the leading agricultural states of the Union.

FINIS

APPENDIX

The data given in the following tables have been obtained through personal interviews with groups of the older farmers and other elderly people.

At the request of the writer, the County Agricultural Agents and County Superintendents of Schools obligingly arranged for conferences in the several counties. With few exceptions, the number attending these conferences ranged from four or five to a dozen or more persons.

Neither accuracy nor completeness is claimed; but it is believed that the information is approximately correct, and that the tables therefore afford a fairly trustworthy indication of the development of the several counties in the lines tabulated.

As the aim of the author is reliability of information, he will be very grateful to those who will report corrections of known errors or omissions of statement in either the text or the tables.

TABLE 1

Settlement, Organization, States and Nationalities Represented in the Several Counties

County	Settled	Organ-ized	States From Which Settlers Came	Nationalities Represented
Adams	1830	1836	New York, Ohio, Pennsylvania	English and German
Allen	1815	1824	Canada, Maryland, New York, Ohio, Pennsylvania, Virginia	British, French and Dutch
Bartholomew	1819	1821	Ky., No. Car., Ohio, Penna., Tenn., Va.	German and Irish
Benton	1830	1840	Kentucky, New York, Ohio, Pennsylvania, Virginia	English and Irish
Blackford	1831	1839	New York, Ohio, Pennsylvania, Virginia	English and Scotch-Irish
Boone	1828	1831	Ky., N. Y., No. Car., Ohio, Penna., Tenn., Va.	English and French
Brown	1800	1836	Kentucky, Ohio, Tennessee, Virginia	English and Dutch
Carroll	1824	1828	Kentucky, New York, Ohio, Pennsylvania, Tennessee, Virginia	Dutch, English, Irish, Scotch
Cass	1824	1829	Kentucky, New York, Ohio, Pennsylvania, Virginia	English and German
Clark	1800	1801	Ky., Md., N. Y., No. Car., Ohio, Penna., Va.	English and German
Clay	1816	1825	Ky., No. Car., Ohio, Penna., Tenn., Va.	English and German
Clinton	1826	1830	Kentucky, Ohio, Pennsylvania, Tennessee, Virginia	English, German, Irish
Crawford	1806	1818	Ky., No. Car., Ohio, Penna., Tenn., Va.	Dutch and English
Davies	1806	1817	Carolinas, Kentucky, Ohio, Pennsylvania, Tennessee	English and French
Dearborn	1796	1803	Ky., Md., N. J., N. Y., Ohio, Penna., Va.	English, Irish, Scotch
Decatur	1819	1822	Ky., N. J., N. Y., Ohio, Penna., Va.	English, Irish, Scotch
DeKalb	1833	1837	New York, Ohio, Pennsylvania	English, French and German
Delaware	1830	1837	Kentucky, New York, North Carolina, Ohio, Pennsylvania	Largely English
DuBois	1801	1818	Ky., No. Car., Ohio, Penna., Tenn., Va.	English and French
Elkhart	1825	1830	New York, Ohio, Pennsylvania, Virginia	English and German
Fayette	1805	1819	Carolinas, Ky., Md., N. Y., Ohio, Penna., Va.	German, Irish, Scotch
Floyd	1804	1819	Ky., N. J., N. Y., No. Car., Ohio, Penna., Va.	English and German
Fountain	1823	1826	Ky., Md., N. J., N. Y., No. Car, Ohio, Penna, Va.	English, Irish, Pennsylvania-Dutch and Scotch
Franklin	1803	1811	Carolinas, Ky., Md., N. J., Ohio, Penna., Va.	English, French, German
Fulton	1830	1836	New York, Ohio, Pennsylvania	English and German
Gibson	1807	1813	Carolinas, Ky., N. Y., Ohio, Penna., Tenn., Va.	English, Irish, Scotch and Welsh
Grant	1826	1832	North Carolina, Ohio, Pennsylvania, Virginia	English and Pennsylvania-Dutch
Greene	1817	1821	Ky., No. Car., Ohio, Penna., Tenn., Va.	English, Scotch, Scotch-Irish, Swiss
Hamilton	1819	1823	Kentucky, North Carolina, Ohio, Pennsylvania, Virginia	English and German
Hancock	1818	1828	Kentucky, North Carolina, Ohio, Pennsylvania, Virginia	English, French, German, Irish, Scotch
Harrison	1802	1808	Ky., Md., N. J., No. Car., Ohio, Penna., Va.	English, French, German

TABLE 1 *(Continued)*

Settlement, Organization, States and Nationalities Represented in the Several Counties

County	Settled	Organ-ized	States From Which Settlers Came	Nationalities Represented
Hendricks	1820	1824	Kentucky, Ohio, Pennsylvania, Tennessee, Virginia	English and German
Henry	1819	1822	No. Car., Ohio, Penna., Tenn., Va., W. Va.	English, German, Scotch, Welsh
Howard	1835	1844	Kentucky, North Carolina, Ohio, Pennsylvania, Virginia	English, German, Irish, Scotch
Huntington	1829	1834	Kentucky, New York, Ohio, Pennsylvania	English, German and Scotch
Jackson	1805	1816	Ky., No. Car., Ohio, Penna., Tenn., Va.	German, Irish and Scotch
Jasper	1834	1838	Kentucky, New York, Ohio, Virginia	English and German
Jay	1821	1836	New York, Ohio, Pennsylvania	English and German
Jefferson	1805	1811	Ky., Md., N. Y., No. Car., Ohio, Penna., Va.	English, German, Holland, Scotch, Swiss
Jennings	1815	1817	Kentucky, New York, Ohio, Pennsylvania	English and German
Johnson	1818	1832	Ky., No. Car., Ohio, Penna., Tenn., Va.	Dutch, English, French, German, Irish, Scotch
Knox	1702	1790	Carolinas, Illinois, Kentucky, Ohio, Pennsylvania, Virginia	English, French, German, Spanish
Kosciusko	1833	1837	New York, Ohio, Pennsylvania, Virginia, West Virginia	English, German, Irish, Scotch
LaGrange	1828	1832	New York, Ohio, Pennsylvania, Vermont	English, German, Irish
Lake	1833	1837	New York, Ohio, Pennsylvania	English and German
LaPorte	1829	1832	New York, Ohio, Pennsylvania, Virginia	English, French and Scotch
Lawrence	1810	1818	Kentucky, North Carolina, Ohio, Tennessee, Virginia	Irish and Scotch
Madison	1820	1823	Carolinas, Kentucky, Ohio, Pennsylvania, Virginia	Dutch, English, Irish and Scotch
Marion	1819	1822	Ky., Md., N. Y., No. Car., Ohio, Penna., Va.	English and German
Marshall	1832	1836	New York, Ohio and Pennsylvania	English, French, German, Irish, Scotch
Martin	1811	1820	Pennsylvania and Virginia	Dutch and English
Miami	1827	1834	New York, Ohio, Pennsylvania, Virginia	Dutch, English and Irish
Monroe	1810	1818	Carolinas, Ky., Md., Ohio, Penna., Tenn., Va.	English
Montgomery	1821	1823	Kentucky, Ohio and Virginia	English, German and Irish
Morgan	1819	1822	Kentucky, North Carolina, Ohio, Tennessee, Virginia	English and German
Newton	1832	1835	New Jersey, New York, Ohio, other counties	English and Holland
Noble	1827	1836	New York, Ohio, Pennsylvania	English and German
Ohio	1803	1844	Kentucky, Maryland, New York, Ohio, Pennsylvania, Virginia	English, German, Irish
Orange	1807	1816	Kentucky, North Carolina, Tennessee, Virginia	English and German
Owen	1815	1819	Kentucky, North Carolina, Ohio, Tennessee, Virginia	German, Irish, Scotch
Parke	1818	1821	Carolinas, Kentucky, Ohio, Pennsylvania, Tennessee, Virginia	English, French, German, Irish, Scotch
Perry	1808	1814	Kentucky, New York, Ohio, Pennsylvania, Virginia	English, Irish and Scotch

TABLE 1 *(Continued)*

Settlement, Organization, States and Nationalities Represented in the Several Counties

County	Settled	Organ-ized	States From Which Settlers Came	Nationalities Represented
Pike	1800	1817	Carolinas, Kentucky, Ohio, Pennsylvania, Tennessee, Virginia	English and Scotch
Porter	1833	1836	New York, Ohio, Pennsylvania	Dutch, English, French, German, Irish, Scotch
Posey	1800	1814	Carolinas, Ky., N. Y., O., Tenn., Va.	English, Irish and Welsh
Pulaski	1830	1840	Ohio, Pennsylvania, other counties	German, Irish, Swedish
Putnam	1818	1822	Kentucky, North Carolina, Ohio, Tennessee, Virginia	English, German, Irish, Scotch
Randolph	1814	1818	Carolinas, Kentucky, Ohio, Pennsylvania, Tennessee, Virginia	German and Holland
Ripley	1814	1818	Kentucky, Ohio and Pennsylvania	English, German, Irish, Scotch
Rush	1818	1822	Kentucky, North Carolina, Ohio, Pennsylvania, Virginia	Pennsylvania-Dutch, Scotch-Irish
St. Joseph	1824	1830	New York, Ohio, Pennsylvania, Virginia	Dutch, English, French, German, Irish
Scott	1800	1820	Kentucky, Maryland, New York, Ohio, Pennsylvania	German, Irish, Scotch, Welsh
Shelby	1818	1822	Kentucky, North Carolina, Ohio, Pennsylvania, Virginia	English and Irish
Spencer	1802	1818	Ky., Md., No. Car., Ohio, Penna., Va.	English and German
Starke	1835	1844	Michigan, New York, Ohio, other counties	English, French, German
Steuben	1831	1837	Michigan, New York, Ohio, Pennsylvania, Vermont	English, German, Irish
Sullivan	1806	1817	Carolinas, Ky., N. Y., Ohio, Penna., Tenn., Va.	English, Irish, Scotch, Welsh
Switzerland	1795	1814	Kentucky, Maryland, New York, Ohio, Pennsylvania, Virginia	English, Irish, Scotch, Swiss
Tippecanoe	1760	1826	Kentucky, Maryland, New York, Ohio, Pennsylvania, Virginia	Dutch, English, Scotch-Irish, Welsh
Tipton	1830	1844	Ky., Md., No. Car., N. Y., Ohio, Penna., Va.	English, French, German
Union	1804	1821	Carolinas, Ky., N. J., Ohio, Penna., Tenn., Va.	English and Irish
Vanderburg	1812	1818	Ky., N. J., N. Y., Ohio, Penna., Va.	English and Irish
Vermillion	1816	1824	Ky., Md., N. J., N. Y., No. Car., Ohio, Penna., Tenn., Va.	English, German, Irish
Vigo	1809	1818	Ky., Md., N. J., N. Y., No. Car., Ohio, Penna., Tenn., Va.	English, German, Irish
Wabash	1827	1835	Ky., Md., N. Y., Ohio, Penna., Tenn., Va.	Dutch, English, German, Irish
Warren	1825	1827	Ky., Md., N. Y., Ohio, Penna., Va.	English, French, German
Warrick	1805	1813	Ky., Md., N. Y., No. Car., Ohio, Penna., Tenn., Va.	English, German, Scotch
Washington	1803	1814	Ky., Md., N. Y., No. Car., Ohio, Penna., Tenn., Va.	English, Irish, Scotch
Wayne	1805	1811	Carolinas, Ky., Md., N. J., Ohio, Penna., Tenn., Va.	Dutch and English
Wells	1829	1837	New York, Ohio, Pennsylvania, Vermont	English and Irish
White	1829	1834	Ky., Md., N. Y., Ohio, Penna., Va.	English, German, Irish
Whitley	1834	1839	New York, Ohio, Pennsylvania, Virginia	Largely German and Scotch

TABLE 2

Approximate Year of Introduction of Improved Crops and Farm Practices

COUNTY	Improved Crops				Improved Farm Practices							
	Clover	Alfalfa	Soy Beans	Cow Peas	Tile Drain	Rotation	Fertilizer	Limestone	Late Seeding	Silage	Balanced Rations	Vaccination
Adams	1856	1885	1912	1905	1870	1865	1900	1906	1912	1888	1890	1910
Allen	1850	1905	1900	1895	1865	1860	1890	1910	1910	1895	1885	1910
Bartholomew	1850	1895	1895	1893	1860	1850	1880	1910	1915	1900	1890	1910
Benton	1860	1913	1915	1910	1876	1880	1915	1918	1920	1900	1890	1910
Blackford	1860	1903	1918	1920	1870	1882	1908	1913	1918	1898	1898	1903
Boone	1850	1890	1913	1905	1875	1870	1880	1910	1898	1898	1900	1910
Brown	1850	1913	1922	1918	1884	1910	1890	1920	1922	1915	1922	1911
Carroll	1850	1900	1908	1900	1870	1870	1900	1910	1910	1900	1872	1910
Cass	1850	1902	1900	1905	1863	1860	1885	1910	1900	1895	1900	1899
Clark	1832	1904	1910	1895	1870	1850	1899	1875	1897	1900	1905	1910
Clay	1850	1910	1908	1908	1875	1880	1883	1913	1917	1903	1908	1918
Clinton	1840	1910	1915	1915	1850	1880	1899	1910	1910	1900	1910	1900
Crawford	1890	1910	1915	1910	1852	1910	1899	1910	1915	1910	1920	None
Daviess	1860	1912	1920	1895	1875	1860	1890	1920	1895	1903	1918	1909
Dearborn	1840	1880	1895	1895	1880	1890	1899	1916	1900	1890	1890	1905
Decatur	1850	1900	1912	1903	1865	1865	1885	1910	1910	1890	1895	1910
DeKalb	1840	1890	1913	1908	1875	1860	1886	1910	1915	1890	1890	1912
Delaware	1860	1890	1900	1888	1870	1870	1908	1906	1907	1902	1904	1911
DuBois	1840	1918	1921	1910	1882	1895	1887	1875	1916	1906	1907	None
Elkhart	1855	1900	1900	1895	1860	1860	1895	1895	1907	1880	1885	1900
Fayette	1845	1895	1915	1900	1850	1840	1885	1910	1899	1889	1910	1898
Floyd	1850	1900	1920	1895	1880	1870	1870	1910	1915	1898	1890	None
Fountain	1850	1902	1898	1906	1860	1875	1898	1913	1898	1902	1890	1912
Franklin	1865	1848	1920	1920	1825	1885	1896	1916	1900	1890	1895	1908
Fulton	1850	1905	1910	1905	1875	1875	1900	1915	1905	1900	1905	1910
Gibson	1850	1905	1909	1900	1875	1885	1905	1915	1915	1910	1908	1900
Grant	1856	1900	1906	1906	1860	1850	1910	1910	1918	1898	1900	1910
Greene	1860	1895	1910	1898	1878	1895	1880	1912	1910	1896	1908	1910
Hamilton	1850	1900	1910	1905	1870	1875	1885	1905	1918	1890	1895	1910
Hancock	1850	1900	1915	1912	1870	1850	1899	1908	1918	1885	1905	1910
Harrison	1840	1900	1921	1898	1882	1905	1859	1906	1921	1908	1922	None

TABLE 2 *(Continued)*

Approximate Year of Introduction of Improved Crops and Farm Practices

COUNTY	Improved Crops				Improved Farm Practices							
	Clover	Alfalfa	Soy Beans	Cow Peas	Tile Drain	Rotation	Fertilizer	Limestone	Late Seeding	Silage	Balanced Rations	Vaccination
Hendricks	1850	1900	1888	1890	1870	1870	1899	1908	1913	1890	1900	1911
Henry	1840	1883	1907	1905	1860	1870	1885	1910	1900	1898	1902	1900
Howard	1855	1900	1910	None	1875	1855	1899	1918	1905	1907	1900	1902
Huntington	1854	1893	1895	1890	1875	1845	1878	1900	1905	1890	1912	1910
Jackson	1850	1898	1912	1896	1875	1878	1875	1910	1914	1900	1898	1908
Jasper	1860	1906	1912	1911	1873	1900	1900	1908	1916	1900	1905	1910
Jay	1840	1900	1900	1900	1866	1860	1890	1910	1915	1900	1910	1900
Jefferson	1864	1900	1908	1908	1863	1885	1880	1914	1875	1880	1918	Little
Jennings	1895	1910	1910	1910	1880	1890	1877	1905	1915	1910	1917	1922
Johnson	1855	1900	1905	1900	1865	1855	1890	1915	1918	1893	1910	1909
Knox	1840	1900	1914	1890	1870	1885	1880	1900	1905	1900	1900	1910
Kosciusko	1865	1898	1914	None	1870	1868	1890	1918	1900	1895	1910	1912
LaGrange	1850	1890	1893	1888	1875	1855	1888	1898	1908	1890	1900	1908
Lake	1860	1900	1915	1895	1875	1856	1885	1900	1920	1893	1885	1915
LaPorte	1850	1911	1918	1900	1880	1850	1905	1915	1913	1890	1860	1898
Lawrence	1840	1905	1915	1905	1882	1900	1882	1909	1915	1906	1900	1910
Madison	1850	1890	1910	1910	1875	1875	1898	1920	1915	1892	1900	1905
Marion	1850	1900	1910	1905	1845	1850	1890	1900	1905	1890	1900	1910
Marshall	1860	1890	1900	1890	1870	1865	1890	1915	1918	1900	1903	1908
Martin	1845	1905	1916	1895	1876	1882	1880	1908	1908	1900	1910	1910
Miami	1850	1900	1912	1910	1875	1875	1900	1915	1918	1900	1900	1900
Monroe	1880	1916	1911	1911	1880	1860	1885	1900	1916	1906	1910	1910
Montgomery	1850	1898	1905	1905	1865	1858	1900	1912	1910	1904	1906	1905
Morgan	1860	1905	1918	1900	1880	1865	1899	1915	1910	1899	1910	1910
Newton	1850	1905	1912	1912	1880	1885	1896	1905	1918	1896	1905	1911
Noble	1850	1900	1914	1910	1872	1865	1900	1917	1912	1893	1914	1910
Ohio	1850	1885	1900	1895	1883	1875	1874	1900	1900	1890	1890	1905
Orange	1846	1890	1900	1895	1878	1865	1875	1900	1875	1895	1905	1911
Owen	1836	1873	1908	1885	1870	1890	1870	1910	1910	1900	1900	1913
Parke	1855	1910	1915	1913	1860	1860	1880	1915	1915	1900	1900	1910
Perry	1850	1895	1915	1895	1880	1915	1890	1915	1920	1905	1918	None

TABLE 2 *(Continued)*

Approximate Year of Introduction of Improved Crops and Farm Practices

COUNTY	Improved Crops				Improved Farm Practices							
	Clover	Alfalfa	Soy Beans	Cow Peas	Tile Drain	Rotation	Fertilizer	Limestone	Late Seeding	Silage	Balanced Rations	Vaccination
Pike	1850	1906	1910	1900	1880	1875	1890	1906	1920	1906	1906	1910
Porter	1860	1902	1900	1900	1875	1862	1891	1910	1910	1897	1900	1900
Posey	1840	1890	1912	1900	1860	1885	1885	1900	1914	1890	1890	1910
Pulaski	1848	1910	1912	1905	1871	1850	1895	1902	1910	1890	1902	1898
Putnam	1850	1910	1917	1913	1860	1900	1885	1910	1910	1900	1904	1915
Randolph	1835	1900	1897	1895	1870	1884	1880	1913	1909	1898	1900	1910
Ripley	1850	1900	1915	1900	1888	1860	1875	1905	1917	1885	1915	None
Rush	1850	1900	1912	1898	1856	1860	1880	1910	1919	1895	1892	1900
St. Joseph	1842	1888	1910	1905	1866	1866	1906	1910	1896	1884	1886	1910
Scott	1875	1915	1922	1919	1865	1900	1899	1921	1900	1900	1920	None
Shelby	1850	1904	1906	None	1865	1860	1890	1908	1905	1900	1910	1913
Spencer	1850	1907	1921	1900	1875	1912	1899	1912	1920	1900	1915	1914
Starke	1870	1915	1914	1900	1880	1880	1906	1908	1910	1905	1895	1911
Steuben	1860	1900	1910	1900	1880	1870	1900	1913	1913	1895	1895	1910
Sullivan	1840	1900	1910	1893	1865	1875	1900	1907	1915	1900	1900	1900
Switzerland	1850	1890	1905	1905	1882	1890	1870	1910	1913	1885	1890	None
Tippecanoe	1850	1890	1913	1910	1870	1870	1900	1910	1910	1895	1900	1910
Tipton	1859	1907	1917	1915	1865	1865	1905	1900	1900	1900	1910	1905
Union	1850	1898	1900	None	1856	1875	1899	1900	1900	1898	1875	1905
Vanderburg	1850	1895	1914	1890	1875	1885	1880	1910	1880	1913	1913	1912
Vermillion	1850	1900	1905	None	1865	1850	1910	1910	1910	1900	1907	1910
Vigo	1850	1900	1910	1905	1880	1868	1899	1910	1910	1898	1908	1912
Wabash	1850	1900	1912	1912	1866	1870	1900	1916	1914	1898	1912	1912
Warren	1850	1907	1917	1912	1872	1878	1905	1915	1920	1904	1910	1910
Warrick	1845	1880	1905	1885	1875	1890	1875	1910	1915	1905	1905	1910
Washington	1850	1895	1895	1880	1875	1880	1874	1910	1905	1890	1915	1912
Wayne	1850	1890	1914	1890	1870	1855	1889	1893	1910	1896	1903	1905
Wells	1856	1895	1912	None	1870	1850	1895	1908	1905	1900	1845	1912
White	1850	1900	1915	1910	1880	1870	1900	1910	1920	1900	1890	1910
Whitley	1850	1890	1910	1905	1870	1880	1895	1915	1900	1892	1895	1916

TABLE 3

Approximate Year of Introduction of Improved Breeds of Cattle Into the Several Counties

COUNTY	Beef Breeds					Dairy Breeds				Dual Purposes		
	Polled Angus	Gal-loway	Here-ford	Polled Durham	Short-horn	Ayr-Shire	Guern-sey	Holstein-Friesian	Jersey	Brown Swiss	Devon	Red Polled
Adams	1896	—	1890	1895	1875	1854	1910	1885	1875	1910	1860	1897
Allen	1870	1870	1896	1908	1860	1920	1915	1890	1875	—	1850	1890
Bartholomew	1895	—	1890	1895	1840	1920	1908	1913	1888	—	—	1908
Benton	1880	—	1874	1886	1875	1920	—	1880	1880	1896	1896	—
Blackford	1900	1898	1898	1900	1856	1860	1918	1895	1896	—	1860	—
Boone	1881	—	1890	1908	1854	1920	1914	1903	1876	—	1857	1898
Brown	1900	—	1895	1896	1877	1925	1925	1916	1876	—	—	—
Carroll	1880	—	1880	1890	1858	—	1905	1890	1870	—	1870	—
Cass	1885	—	1890	1886	1850	—	1912	1885	1882	—	—	—
Clark	1895	—	1920	1908	1860	1890	1920	1881	1875	—	—	—
Clay	1890	1895	1890	1900	1875	—	1908	1908	1880	—	—	—
Clinton	1880	1908	1884	1900	1860	1890	1890	1890	1875	—	—	1895
Crawford	—	—	1895	1900	1881	—	—	—	1892	—	—	—
Daviess	1893	—	1895	1900	1875	—	1914	1892	1886	—	—	—
Dearborn	1913	—	1908	—	1850	—	1921	1885	1868	—	—	1890
Decatur	1892	1894	1906	1873	1853	—	1924	1880	1875	—	—	—
DeKalb	1900	1870	1904	1915	1870	—	1918	1887	1880	1918	1865	1895
Delaware	1900	1885	1885	1890	1865	1920	1878	1888	1880	1904	—	1902
DuBois	—	—	—	1895	1886	—	1900	—	1890	—	—	1900
Elkhart	1908	—	1884	1908	1852	1870	1895	1887	1868	—	—	1908
Fayette	1896	—	1900	1899	1838	1925	1924	1886	1865	—	—	1918
Floyd	—	—	1890	—	1860	—	—	1898	1870	—	—	1890
Fountain	1890	—	1894	1890	1870	—	1915	—	1870	—	—	1908
Franklin	1900	1905	1910	1885	1838	—	—	1885	1875	—	—	1900
Fulton	1904	—	—	1890	1865	—	—	1910	1870	1905	1875	1907
Gibson	1870	—	1880	1890	1852	—	—	1895	1872	—	—	—
Grant	1890	1898	1884	1892	1856	1870	1908	1890	1870	—	1858	1887
Greene	1890	—	1884	1884	1862	1915	1906	1893	1880	—	—	—
Hamilton	1885	—	1880	1880	1870	1908	1912	1878	1879	1924	1858	1908
Hancock	1900	—	1875	1900	1874	—	1918	1890	1876	—	1875	—
Harrison	1908	—	1895	—	1850	1912	1890	1889	1870	—	1870	—

TABLE 3 *(Continued)*

Approximate Year of Introduction of Improved Breeds of Cattle Into the Several Counties

COUNTY	Beef Breeds					Dairy Breeds				Dual Purposes		
	Polled Angus	Galloway	Hereford	Polled Durham	Shorthorn	Ayr-Shire	Guernsey	Holstein-Friesian	Jersey	Brown Swiss	Devon	Red Polled
Hendricks	1892	—	1878	1893	1852	—	1895	1887	1870	1910	1880	1880
Henry	1898	1891	1890	1894	1850	1901	1916	1890	1870	—	1878	1908
Howard	1890	—	1885	1885	1865	—	1920	1900	1878	—	1860	—
Huntington	1885	—	1895	1908	1865	1913	1910	1910	1875	—	—	1908
Jackson	1898	—	1891	1882	1865	1908	1918	1878	1872	—	1870	—
Jasper	1885	1885	1875	1894	1855	1896	1913	1889	1875	—	1864	1898
Jay	1872	1890	1880	1891	1850	1900	1895	1885	1860	1918	—	1900
Jefferson	1904	—	1875	1905	1825	—	1900	1900	1890	—	—	1908
Jennings	—	—	1898	1898	1845	—	—	—	1877	—	—	1908
Johnson	1904	—	1890	—	1853	1920	—	1885	1878	1882	—	1870
Knox	1880	—	1883	1900	1860	—	1910	1845	1870	—	—	—
Kosciusko	1875	—	1890	1895	1855	1920	1910	1908	1889	1895	—	1895
LaGrange	1908	1908	1890	1888	1865	1900	1915	1880	1876	1908	1860	1870
Lake	1908	—	1880	1900	1850	1910	1908	1885	1860	1912	1855	1908
LaPorte	1906	1887	1880	1908	1865	—	1886	1880	1870	1918	1870	1908
Lawrence	1890	1890	1889	1882	1862	—	1900	1875	1875	—	—	1890
Madison	1900	1886	1875	1890	1865	—	1905	1908	1870	—	1878	1896
Marion	1883	—	1876	1904	1852	1866	1910	1885	1859	1906	1850	1902
Marshall	1904	1895	1896	1890	1876	—	1900	1890	1890	1923	1880	1908
Martin	1889	—	1905	1908	1886	1920	—	—	1914	—	—	—
Miami	1894	1894	1887	1890	1865	1926	1914	1900	1878	1924	1880	1891
Monroe	1885	—	1885	1880	1828	1870	—	—	1880	—	—	1886
Montgomery	1880	1900	1872	1890	1860	1916	1910	1905	1878	—	1857	1890
Morgan	1890	1898	1892	1901	1870	1920	1890	1890	1886	—	—	—
Newton	1887	—	1885	1890	1860	—	—	1880	1874	—	—	—
Noble	1880	1889	1882	1895	1865	—	1908	1880	1875	1908	1860	1900
Ohio	1885	—	1890	1890	1850	—	1910	1880	1868	—	—	1890
Orange	1883	—	1893	1893	1873	—	—	1905	1878	—	1875	—
Owen	1885	—	1905	1905	1856	1922	1922	1921	1905	1924	1860	1918
Parke	1890	1888	1890	1905	1854	—	1912	1877	1880	—	1857	1900
Perry	—	1891	1908	1908	1886	—	1908	1898	1887	—	—	—

TABLE 3 *(Continued)*

Approximate Year of Introduction of Improved Breeds of Cattle Into the Several Counties

COUNTY	Beef Breeds					Dairy Breeds				Dual Purposes		
	Polled Angus	Gal-loway	Here-ford	Polled Durham	Short-horn	Ayr-Shire	Guern-sey	Holstein-Friesian	Jersey	Brown Swiss	Devon	Red Polled
Pike	1902	—	1890	1912	1865	—	1912	1885	1850	—	—	—
Porter	1897	1905	1878	1908	1875	1908	1914	1878	1882	1914	1867	1908
Posey	1900	—	1888	—	1840	—	1895	1885	1885	—	—	1903
Pulaski	1901	—	1908	1908	1857	—	1908	1890	1880	—	—	—
Putnam	1893	—	1882	—	1837	1920	1923	1915	1870	—	1860	—
Randolph	1900	1892	1891	1890	1885	—	1920	1882	1882	1916	1875	1893
Ripley	—	—	1900	1905	1875	1920	—	1875	1850	—	—	1898
Rush	1885	1908	1890	1900	1852	—	1908	1881	1872	1890	1870	1912
St. Joseph	1885	—	1880	1900	1867	1920	1885	1878	1875	1910	1855	—
Scott	1885	—	1908	1908	1863	—	—	1888	1880	—	—	—
Shelby	1900	—	1892	1895	1860	—	1900	1882	1873	—	1880	1890
Spencer	1900	—	1905	1908	1885	—	1900	1900	1885	—	—	—
Starke	1885	1885	1877	1895	1876	—	1908	1885	1885	1920	1880	1895
Steuben	1905	1900	1875	1890	1865	—	1885	1880	1878	1915	1853	1900
Sullivan	1890	1890	1886	1900	1866	—	1920	1900	1870	—	—	1925
Switzerland	—	—	—	1908	1875	—	1916	1905	1884	—	—	—
Tippecanoe	1880	1881	1871	1905	1860	1850	1885	1886	1877	—	1850	1908
Tipton	1908	—	1908	1908	1886	1900	1908	1908	1906	—	—	1905
Union	1908	—	—	1895	1847	—	1925	—	1874	—	—	—
Vanderburg	—	—	—	—	1871	—	1900	1890	1863	—	—	—
Vermillion	1880	—	1890	1900	1873	1925	1915	1900	1880	—	1850	1900
Vigo	1890	—	1895	1908	1842	1910	1910	1890	1862	—	—	—
Wabash	1890	—	1885	1890	1845	1920	1886	1875	1872	—	—	1900
Warren	1885	1900	1885	1890	1855	—	1925	1885	1875	—	—	1900
Warrick	1898	—	1900	1885	1854	1915	1900	1893	1850	—	—	—
Washington	1883	—	1883	1890	1854	—	1890	—	1880	—	—	1908
Wayne	1860	—	1880	—	1833	1920	1913	1890	1878	—	1852	1908
Wells	1890	1885	1903	—	1865	1920	1918	1900	1890	—	—	1896
White	1893	—	1887	—	1875	—	1924	—	1874	—	—	1900
Whitley	1895	1900	1880	—	1884	1921	1908	1885	1880	—	1870	1918

TABLE 4

Approximate Year of Introduction of Improved Breeds of Horses Into the Several Counties

COUNTY	Draft Breeds					Coach Breeds				Saddle and Light Harness			
	Belgian	Clydes-dale	English Shire	French Draft	Perch-eron	Cleveland Bay	French Coach	German Coach	Hack-ney	American Saddle	Morgan	Standard Bred	Thor-oughbred
Adams	1875	—	—	1914	1877	—	—	—	—	—	1880	1875	1875
Allen	1890	1880	1880	1886	1888	1875	—	1908	1900	—	1850	1860	1870
Bartholomew	1908	1880	—	1914	1875	—	—	—	1908	—	1860	1880	—
Benton	1895	1882	1892	1908	1875	1892	—	1885	1875	—	1860	1865	1880
Blackford	1900	1888	—	1865	1895	—	—	1893	—	1926	—	1893	—
Boone	1903	1888	1900	1914	1875	—	1908	1892	1900	1908	1865	1870	—
Brown	—	1900	—	—	1905	1895	—	1895	—	—	1860	1891	—
Carroll	1875	1875	1890	1894	1870	1850	—	1895	1890	—	1850	1885	1853
Cass	1885	1877	1906	1888	1875	1890	1894	1912	1902	—	1865	1885	1853
Clark	1914	—	—	1914	1880	—	—	1900	1887	—	1875	1885	1870
Clay	1908	1885	1890	—	1875	1888	—	1903	1908	—	1857	1873	1867
Clinton	1908	1870	1890	—	1880	1890	—	1895	1900	—	1867	1860	1853
Crawford	1895	—	1895	—	1892	1886	—	1904	—	—	1860	1890	—
Daviess	1915	1880	1908	1914	1880	—	1908	1908	1908	—	1860	1880	—
Dearborn	1875	1880	—	—	1870	—	—	1906	—	1908	1855	1860	—
Decatur	1914	1878	1908	1914	1880	1888	—	1908	1908	—	1863	1863	1870
DeKalb	1900	1908	1912	—	1877	1874	1888	—	—	—	1860	1870	1875
Delaware	1900	1875	1885	1887	1890	—	1890	1900	1908	1908	1855	1870	1880
DuBois	—	—	1895	—	1896	1914	—	1898	—	—	—	1880	—
Elkhart	1900	1879	—	1908	1876	—	1908	1890	—	1908	1856	1885	—
Fayette	1910	1883	1908	—	1882	—	1890	—	—	—	1860	1854	1854
Floyd	—	1880	—	—	1870	—	—	—	—	—	1862	1860	—
Fountain	1886	1880	1885	1908	1875	1890	1900	1895	1885	—	1860	1860	1870
Franklin	1868	1914	—	—	1870	—	—	—	—	—	1850	1865	1832
Fulton	1890	1880	1885	1884	1870	1885	1890	1890	—	1908	1885	1865	—
Gibson	1896	1883	1888	1914	1870	1886	1904	1904	1880	1908	1850	1850	1850
Grant	1900	1879	1890	1860	1860	1883	—	1908	1895	—	1855	1871	—
Greene	1914	1890	1900	—	1885	—	1908	1895	—	—	1860	1901	1846
Hamilton	1889	1899	1885	1914	1883	1878	—	1894	1900	—	1860	1875	1873
Hancock	1885	1880	1890	1887	1870	1890	—	1900	—	—	1860	1870	1870
Harrison	—	—	—	1873	1863	—	—	1893	—	1915	1868	1865	1850

TABLE 4 *(Continued)*

Approximate Year of Introduction of Improved Breeds of Horses Into the Several Counties

COUNTY	Draft Breeds					Coach Breeds			Saddle and Light Harness				
	Belgian	Clydes-dale	English Shire	French Draft	Perch-eron	Cleveland Bay	French Coach	German Coach	Hack-ney	American Saddle	Morgan	Standard Bred	Thor-oughbred
Hendricks	1908	1908	1885	1914	1885	—	1908	1912	1898	1888	1870	1870	1870
Henry	1885	1876	1880	1879	1880	1880	—	1900	1893	—	1867	1875	—
Howard	1880	1875	1880	1908	1876	1888	—	—	—	—	1870	1870	—
Huntington	1900	—	1908	1908	1900	—	—	1906	1910	—	—	1870	1885
Jackson	1887	1875	1886	1884	1878	1882	1892	1893	1886	—	1855	1885	—
Jasper	1885	1875	1908	1885	1870	1890	—	1885	—	—	1850	1885	1867
Jay	1880	1885	1865	1892	1875	1890	1890	1893	1908	—	1850	1877	—
Jefferson	1900	1884	—	1890	1890	—	—	1908	1899	1880	1840	1908	1915
Jennings	1914	—	—	1908	1872	—	—	1904	—	—	1870	1868	1873
Johnson	1896	1874	1886	1914	1899	—	—	1914	—	—	—	1900	—
Knox	1895	1870	1880	1908	1850	—	—	1890	1900	—	1840	1850	—
Kosciusko	1890	1877	1882	1914	1875	1870	—	1915	—	—	1850	1880	1890
LaGrange	1890	1885	1908	1908	1876	1870	—	1900	—	—	1880	1860	1860
Lake	1884	1880	1888	1920	1870	—	1890	1892	1898	—	1850	1860	—
LaPorte	1900	1879	1885	—	1868	1886	—	—	—	—	1863	1865	—
Lawrence	1885	1883	1893	1914	1840	1892	—	1890	—	1908	1860	1882	—
Madison	1875	1883	1890	1886	1882	—	—	1890	—	—	1850	1860	1875
Marion	1890	1872	1890	1884	1870	1890	1890	1893	1889	1888	1856	1865	1860
Marshall	1885	1883	1886	1908	1880	1880	—	—	—	—	1870	1860	1858
Martin	—	1915	1908	—	1908	—	—	—	1908	1908	—	1914	—
Miami	1890	1888	1865	1908	1885	1890	—	1893	—	—	1876	1881	—
Monroe	—	—	1890	—	1885	—	—	1905	1908	—	1843	1850	—
Montgomery	1908	1887	1892	1908	1888	1891	1908	1891	1891	—	1855	1866	1866
Morgan	1908	1886	1886	—	1878	1886	—	1905	1908	—	1860	1862	—
Newton	1900	1880	—	1886	1876	1880	—	1886	—	—	1860	1876	1876
Noble	1890	1878	1880	1882	1884	1882	1885	1887	—	—	1850	1868	—
Ohio	—	1880	1883	1908	1860	1880	—	1890	—	—	1850	1865	—
Orange	—	1875	—	—	1855	—	—	1908	—	—	1860	1875	1850
Owen	1920	1877	—	—	1890	1884	1890	1890	—	1926	1855	1877	1867
Park	—	1880	1886	1887	1880	1890	—	1887	1885	—	1860	1860	1873
Perry	1908	—	1908	—	1904	—	—	1905	—	1908	—	1908	—

TABLE 4 *(Continued)*

Approximate Year of Introduction of Improved Breeds of Horses Into the Several Counties

COUNTY	Draft Breeds					Coach Breeds			Saddle and Light Harness				
	Belgian	Clydesdale	English Shire	French Draft	Percheron	Cleveland Bay	French Coach	German Coach	Hackney	American Saddle	Morgan	Standard Bred	Thoroughbred
Pike	—	1900	1923	—	1890	1889	1889	1889	1889	1889	—	1850	—
Porter	1875	1883	1920	1908	1876	—	1908	1895	—	—	1861	1885	1880
Posey	—	1885	1908	—	1880	—	—	1890	1885	1908	1860	1845	1860
Pulaski	1904	—	1908	1908	1880	1908	1903	1893	—	—	1905	1885	—
Putnam	1914	1880	1889	1914	1898	1893	1885	1905	1914	1908	1855	1855	1853
Randolph	1890	1885	1900	1908	1880	—	1892	1883	1900	—	1890	1875	1875
Ripley	1914	1879	—	1914	1908	—	—	1890	—	—	1850	1850	1856
Rush	1908	1870	1865	1884	1870	1898	—	1905	1895	—	1850	1854	1854
St. Joseph	1890	1882	1882	—	1878	1885	1888	—	—	1908	1850	1855	—
Scott	1890	1885	—	1885	1880	—	—	1908	1908	—	1880	1890	1880
Shelby	1908	1890	1900	1895	1875	1892	1890	1896	1893	—	1850	1850	1858
Spencer	—	—	—	1914	1910	—	1914	1914	—	—	—	1890	—
Starke	1874	1878	1905	1908	1878	—	1895	—	—	1874	1870	1890	—
Steuben	1900	1890	1900	—	1877	1900	1908	—	—	—	1864	1885	—
Sullivan	—	1878	1900	1879	1875	—	—	1905	—	—	1865	1865	—
Switzerland	1908	—	—	1908	1865	—	—	1904	—	1908	1860	1893	—
Tippecanoe	1889	1879	1885	1914	1889	1898	—	1889	1908	—	1866	1868	1865
Tipton	1910	1880	1885	—	1895	—	—	—	—	—	1875	1880	1898
Union	1923	1878	—	1908	1880	1875	—	—	—	—	1873	1883	—
Vanderburg	—	1872	—	1914	1908	—	—	—	—	—	1863	1863	—
Vermillion	1888	1892	1890	—	1885	—	—	1885	1878	—	1850	1855	1853
Vigo	1910	1870	1888	1914	1895	—	1891	1900	—	—	—	1902	1867
Wabash	1888	1880	1850	1887	1870	1889	—	1887	—	—	1860	1873	—
Warren	1900	1890	1880	1914	1860	1875	—	—	—	—	1865	1885	1867
Warrick	1915	—	—	—	1885	—	—	1892	1900	—	1850	1850	—
Washington	1916	1875	1915	1911	1888	1888	—	1908	1914	1915	1850	1865	1865
Wayne	1900	1880	1872	—	1880	—	—	1900	—	1908	1852	1860	1866
Wells	1898	1887	1896	1908	1883	1893	—	—	—	—	—	1894	—
White	1893	1891	1892	1908	1890	1901	1908	1895	1895	—	1875	1908	1865
Whitley	1880	1875	1908	1883	1868	1898	—	—	1908	—	1860	1908	1885

TABLE 5

Approximate Year of Introduction of Improved Breeds of Sheep Into the Several Counties

COUNTY	Fine Wool Breeds			Middle Wool Breeds						Long Wool Breeds		
	American Merino	Delaine Merino	Rambouillet	Cheviot	Dorset	Hampshire	Oxford	Shropshire	Southdown	Cotswold	Leicester	Lincoln
Adams	1884	—	1886	—	1901	1898	1890	1870	1875	1875	—	—
Allen	1850	—	1890	—	1895	1890	1885	1885	1865	1908	—	—
Bartholomew	—	—	1927	1898	1918	1908	1898	1880	1898	1860	—	—
Benton	—	—	1908	—	—	—	—	1895	—	1905	—	—
Blackford	1881	1867	1908	1908	1915	1903	—	1877	—	1923	1856	—
Boone	1850	—	1908	1908	—	1908	1908	1877	1870	1870	—	—
Brown	—	—	—	—	—	1900	—	1900	—	—	—	1900
Carroll	1860	—	—	—	—	1898	1884	1882	1870	1860	—	—
Cass	1857	—	—	—	—	—	1900	1875	1865	1870	—	—
Clark	1883	—	—	1895	—	1900	—	1900	1870	1880	—	—
Clay	1870	—	—	—	—	1898	—	1895	1895	1860	—	—
Clinton	1850	—	—	—	1908	1896	1918	1885	1888	1870	1875	—
Crawford	—	—	—	—	—	—	1908	1908	1908	—	—	—
Daviess	1875	—	—	—	—	—	1900	1895	—	1875	—	—
Dearborn	—	1890	1900	—	—	—	1910	1885	1855	1860	—	—
Decatur	1884	—	1924	1925	—	1912	1893	1883	1881	1878	—	—
DeKalb	1855	1861	1902	1908	—	1900	1896	1886	1870	1870	—	—
Delaware	1864	1876	1908	1912	1900	1900	1890	1878	1880	1870	—	1900
DuBois	1895	—	—	—	—	—	—	1892	1901	—	—	—
Elkhart	1852	—	—	1908	—	—	1875	1870	1865	1868	—	—
Fayette	1850	—	1924	—	1908	1908	—	1890	1860	1835	—	—
Floyd	—	—	—	—	—	—	—	—	—	—	—	—
Fountain	1870	1900	1890	1898	1908	1908	1862	1870	1870	1858	—	—
Franklin	1870	—	—	—	—	—	—	1890	1880	1871	1870	—
Fulton	1860	—	1908	—	—	1910	1873	1873	—	1855	—	—
Gibson	1860	—	—	—	—	—	1908	1908	—	1863	1863	—
Grant	1862	1864	1903	1912	1912	1875	1875	1875	1860	1855	1856	1865
Greene	1856	1922	1922	—	—	1928	—	1875	1870	1873	—	—
Hamilton	—	—	1907	—	—	1900	1908	1880	—	1885	1868	—
Hancock	1877	—	—	1900	1900	1895	1900	1895	1872	1873	—	1895
Harrison	1850	—	—	—	—	—	—	1885	1860	1860	—	—

TABLE 5 (*Continued*)

Approximate Year of Introduction of Improved Breeds of Sheep Into the Several Counties

COUNTY	Fine Wool Breeds			Middle Wool Breeds						Long Wool Breeds		
	American Merino	Delaine Merino	Rambouillet	Cheviot	Dorset	Hampshire	Oxford	Shropshire	Southdown	Cotswold	Leicester	Lincoln
Hendricks	1860	—	1903	1890	—	1895	1853	1878	1876	1853	1853	—
Henry	1855	—	—	—	1916	—	1884	1885	1875	1867	—	1867
Howard	1865	—	—	1918	—	—	1900	1875	1865	1875	—	1900
Huntington	1870	1908	1908	—	—	—	1890	1890	1890	1875	—	—
Jackson	1893	—	—	—	—	1884	1878	1875	1885	1870	—	1875
Jasper	1870	—	—	—	1890	1868	—	1908	—	1860	—	—
Jay	1850	1898	1920	1900	1900	1903	1900	1865	1875	1860	—	—
Jefferson	—	—	—	—	—	1892	—	1908	1880	1880	1868	—
Jennings	1854	—	—	—	—	—	1885	1890	1870	1880	—	—
Johnson	—	—	1890	—	—	—	1880	1882	1882	1874	1870	—
Knox	1833	—	1860	—	1870	—	—	1870	1860	1860	—	—
Kosciusko	1860	1915	1920	—	1920	1908	1890	1885	1880	1860	1915	—
LaGrange	1859	1908	1908	1908	1908	1900	1900	1890	1876	1865	1908	1895
Lake	1860	—	1905	—	—	—	1908	1895	1870	1875	—	—
LaPorte	1859	—	1870	—	1890	—	1900	1880	—	1865	—	—
Lawrence	1860	—	1908	—	1900	1908	1908	1885	1870	1868	—	—
Madison	—	—	—	—	—	—	1900	1885	—	1868	—	—
Marion	1855	—	1888	—	—	1893	1880	1875	1866	1866	1866	—
Marshall	1855	—	1928	1924	—	—	1888	1875	1900	1855	—	—
Martin	—	—	1915	1922	—	—	—	1906	—	—	—	—
Miami	1860	—	—	—	1910	1890	1891	1885	—	—	1871	—
Monroe	—	—	1908	—	1894	—	—	1908	—	1855	—	—
Montgomery	1870	—	1899	1903	1900	1908	1905	1875	1875	1878	—	—
Morgan	1855	—	—	—	—	—	1910	1875	1872	1870	—	—
Newton	—	—	—	—	—	—	—	1885	1869	1860	—	—
Noble	1865	1880	1888	1898	1885	1880	1885	1875	1865	1866	—	—
Ohio	1855	—	—	—	—	—	1885	1885	1855	1880	—	—
Orange	1865	—	—	—	1925	1875	1893	1875	1870	1860	—	1865
Owen	1882	—	1900	1908	—	—	—	1882	—	1870	—	—
Park	1857	—	—	1895	1900	—	1894	1888	1870	1857	—	—
Perry	—	—	—	—	—	—	—	1908	1895	—	—	—

TABLE 5 *(Continued)*

Approximate Year of Introduction of Improved Breeds of Sheep Into the Several Counties

COUNTY	Fine Wool Breeds			Middle Wool Breeds						Long Wool Breeds		
	American Merino	Delaine Merino	Rambouillet	Cheviot	Dorset	Hampshire	Oxford	Shropshire	Southdown	Cotswold	Leicester	Lincoln
Pike	—	—	—	—	—	1900	1890	1885	1887	1887	—	—
Porter	1865	—	—	1880	1905	1898	1898	1880	1870	1875	—	1885
Posey	1814	—	—	—	—	1905	1888	1893	1865	1814	—	—
Pulaski	1865	—	—	—	1908	1898	1900	1895	—	1875	—	1875
Putnam	1852	1908	1908	1895	—	1908	—	1880	1867	1871	1867	—
Randolph	—	—	—	—	—	—	1908	1880	1875	1875	—	—
Ripley	—	—	—	—	—	1908	—	1908	—	—	—	—
Rush	1860	—	1912	—	—	—	1885	1860	1870	1865	1870	—
St. Joseph	1860	—	—	1908	—	—	1908	1875	—	1900	—	—
Scott	1850	—	1919	—	—	1885	—	1895	1860	1865	—	—
Shelby	1850	1908	1920	1924	—	1908	1885	1885	1867	1860	—	—
Spencer	—	—	—	—	—	—	—	1912	—	—	—	—
Starke	1880	—	—	—	—	1905	—	1890	—	1890	—	—
Steuben	1853	1864	1900	—	1895	1900	1900	1898	1875	1875	1853	1875
Sullivan	—	—	—	—	—	1900	—	1880	1880	1870	—	—
Switzerland	—	—	1925	—	—	1917	1908	1915	—	—	—	—
Tippecanoe	1853	—	1892	1890	—	1913	—	1880	1870	1865	1865	—
Tipton	—	—	—	—	1900	1890	1895	1880	1880	1872	1868	1900
Union	—	—	—	—	—	—	—	1885	—	1879	—	—
Vanderburg	—	—	—	—	—	—	—	—	1870	—	—	—
Vermillion	—	—	1913	1900	1900	—	1900	1880	1915	—	—	—
Vigo	1870	—	—	—	—	1905	—	1900	1908	1880	—	—
Wabash	1866	—	—	—	—	1900	1875	1870	—	1845	—	—
Warren	1865	—	—	—	1888	1878	1893	1888	—	1865	—	—
Warrick	—	—	—	—	—	1885	1885	1890	1860	1870	—	—
Washington	—	—	—	—	—	1908	1908	1908	—	1875	—	—
Wayne	1860	—	1913	—	—	—	—	1888	1851	1860	1870	—
Wells	1890	—	1900	—	—	1908	1885	1885	1880	1880	—	1890
White	1860	—	—	—	—	1891	—	1881	1870	1875	—	—
Whitley	1860	—	—	1908	1908	—	1885	1885	1870	1875	—	—

TABLE 6

Approximate Year of Introduction of Improved Breeds of Swine Into the Several Counties

COUNTY	Lard Types of Hogs									Bacon Types		
	Berkshire	Chester White	Duroc Jersey	Essex	Mule-foot	Poland China	Spotted Poland	Suffolk	Victoria	Hampshire	Tamworth	Yorkshire
Adams	1874	1875	1882	1896	1900	1875	1912	—	—	1900	1895	—
Allen	1875	1860	1885	1850	—	1908	1915	—	—	1900	—	—
Bartholomew	1855	1875	1893	1893	1878	1858	—	—	—	—	—	1870
Benton	1880	1890	1893	—	—	1877	1905	1908	—	1904	—	—
Blackford	1860	1908	1870	—	1875	1860	1918	—	—	—	1920	—
Boone	1871	1881	1890	1871	1903	1870	1906	—	—	1900	1920	1912
Brown	1875	1860	1914	—	—	1895	—	—	—	1924	—	—
Carroll	1870	1860	1880	—	1900	1870	1916	—	—	1903	1917	1900
Cass	1865	1865	1885	—	—	1862	1918	—	—	—	—	—
Clark	1890	1875	1891	—	1915	1880	—	—	—	1894	1900	—
Clay	1875	1865	1908	—	—	1870	1908	—	—	1913	—	—
Clinton	1860	1865	1890	1895	1912	1860	1910	—	—	1908	1912	—
Crawford	1900	—	1900	—	1902	1875	1915	—	—	—	—	—
Daviess	1870	1874	1900	—	1913	1874	1912	—	—	1908	—	—
Dearborn	1855	1852	1880	1871	—	1870	1910	—	—	1870	—	1871
Decatur	1850	1855	1885	1883	1908	1860	1924	—	—	1895	1912	1883
DeKalb	1875	1869	1903	1870	1913	1874	1915	—	—	1915	1914	1900
Delaware	1875	1878	1892	1908	1908	1865	1900	1908	—	1908	1915	1915
DuBois	1905	1909	1901	—	—	1890	—	—	—	1911	—	—
Elkhart	1868	1863	1880	—	—	1873	—	—	—	1918	—	—
Fayette	1876	1868	1890	—	—	1845	1914	—	—	1887	—	1890
Floyd	1875	1862	1890	1880	1916	1870	1910	—	—	1870	—	—
Fountain	1875	1871	1890	1893	1900	1875	1915	—	—	1915	1894	1905
Franklin	1885	1850	1870	—	1905	1845	1910	—	—	1870	—	—
Fulton	1875	1865	1885	—	1865	1863	1914	—	—	1890	—	—
Gibson	1858	1865	1890	—	1900	1865	—	—	—	1908	1908	—
Grant	1860	1860	1861	—	1900	1860	1910	—	—	1912	—	—
Greene	1873	1867	1885	1900	1900	1863	1905	—	—	1895	1915	1900
Hamilton	1870	1872	1890	1889	1893	1875	1905	—	1908	1905	—	1908
Hancock	1860	1860	1888	—	1890	1860	1905	—	—	1895	1915	1900
Harrison	1875	1865	1890	1895	1902	1880	—	—	—	1900	—	—

TABLE 6 *(Continued)*

Approximate Year of Introduction of Improved Breeds of Swine Into the Several Counties

COUNTY	Lard Types of Hogs									Bacon Types		
	Berkshire	Chester White	Duroc Jersey	Essex	Mule-foot	Poland China	Spotted Poland	Suffolk	Victoria	Hampshire	Tamworth	Yorkshire
Hendricks	1853	1870	1880	1872	1895	1884	1880	—	—	1898	1900	1900
Henry	1872	1856	1877	—	—	1860	1908	—	—	1908	—	1877
Howard	1867	1875	1887	1900	1898	1868	1912	—	—	1908	—	1908
Huntington	1880	1880	1890	—	—	1875	—	1908	—	—	—	—
Jackson	1875	1875	1880	1908	1903	1875	1905	—	—	1880	—	1900
Jasper	1878	1871	1890	—	—	1865	1913	—	—	1908	—	1915
Jay	1880	1872	1894	1890	1905	1868	1910	—	1908	1885	1915	—
Jefferson	1877	1872	1908	—	—	1866	—	1908	—	—	—	—
Jennings	1870	1860	1890	—	—	1870	—	—	—	—	—	—
Johnson	1897	1905	1902	1880	1895	1877	—	—	—	—	—	—
Knox	1870	1888	1890	1870	—	1870	1892	—	—	1870	1890	—
Kosciusko	1900	1908	1890	—	1915	1873	1905	—	—	1914	—	1900
LaGrange	1870	1870	1895	1870	1908	1858	1908	1870	1908	1915	—	1895
Lake	1885	1865	1890	—	1913	1865	1916	—	1885	1910	—	1908
LaPorte	1870	1868	1890	1880	—	1868	1910	—	—	1910	1900	—
Lawrence	1860	1865	1875	1868	—	1860	—	—	—	1900	—	1895
Madison	1879	1870	1883	—	1900	1870	1910	—	—	1890	1920	1908
Marion	1873	1868	1881	1872	1910	1865	1890	—	—	1895	—	1918
Marshall	1878	1890	1897	—	—	1893	1909	—	—	1900	1927	—
Martin	1908	1908	1917	—	—	1912	—	—	—	1921	—	—
Miami	1905	1890	1885	—	1905	1870	1906	1908	—	1910	1908	—
Monroe	1871	1880	1887	—	1910	1875	—	—	—	—	—	—
Montgomery	1879	1875	1890	—	1890	1870	1900	—	—	1900	1905	1908
Morgan	1885	1865	1877	—	1875	1860	1913	—	—	1910	—	1923
Newton	1876	1876	1908	—	—	1873	1885	—	—	1900	—	—
Noble	1875	1875	1890	1878	1903	1875	1915	—	—	1908	—	1908
Ohio	1860	1863	1880	—	—	1850	—	—	—	1870	—	—
Orange	1845	1860	1893	1875	1908	1865	1915	—	—	1898	1915	—
Owen	1887	1870	1887	1910	1910	1871	1890	—	—	1908	1914	—
Park	1885	1865	1895	1900	1915	1858	1910	—	—	1910	1920	1920
Perry	—	1908	1908	—	—	1897	—	—	—	1908	—	—

TABLE 6 *(Continued)*

Approximate Year of Introduction of Improved Breeds of Swine Into the Several Counties

COUNTY	Lard Types of Hogs									Bacon Types		
	Berkshire	Chester White	Duroc Jersey	Essex	Mule-foot	Poland China	Spotted Poland	Suffolk	Victoria	Hampshire	Tamworth	Yorkshire
Pike	1870	1887	1900	1895	—	1868	1911	—	—	1912	—	—
Porter	1908	1868	1885	—	—	1880	—	—	—	1889	1910	1885
Posey	1885	1870	1895	1880	1908	1863	1922	—	—	1900	1845	1895
Pulaski	1875	1855	1890	—	—	1880	1918	—	—	1905	—	—
Putnam	1870	1858	1875	—	1895	1874	1884	—	—	1910	1908	1908
Randolph	1883	1885	1885	1890	1910	1872	1915	1880	—	1913	—	1910
Ripley	1870	1870	1890	—	—	1870	—	—	—	1900	—	—
Rush	1876	1885	1880	—	1903	1870	1908	—	—	1896	—	—
St. Joseph	1872	1856	1874	—	—	1871	1918	—	—	1908	—	1872
Scott	1860	1865	1870	1880	1900	1860	—	—	—	1900	1908	—
Shelby	1870	1870	1875	1908	1900	1860	1913	—	—	1900	1898	1908
Spencer	1877	1908	1908	—	—	1904	—	—	—	—	—	—
Starke	1879	1874	1892	—	1870	1890	—	—	—	1918	—	1915
Steuben	1888	1870	1908	1870	1900	1850	1919	—	—	1915	1912	1912
Sullivan	1906	1870	1878	—	—	1873	1910	—	—	1903	—	—
Switzerland	1917	1907	1908	—	—	1919	—	—	—	—	—	—
Tippecanoe	1850	1860	1885	1882	1890	1866	1910	—	—	1911	—	1900
Tipton	1865	1885	1878	1875	1898	1865	1900	—	—	1905	1910	1900
Union	1879	1887	1888	—	1920	1866	—	—	—	1913	—	—
Vanderburg	—	1870	1900	—	—	1900	—	—	—	—	—	—
Vermillion	1885	1895	1885	—	—	1850	1900	—	—	1900	1915	—
Vigo	1887	1880	1900	—	1910	1870	1918	—	—	1908	—	1908
Wabash	1865	1865	1870	—	1908	1860	1908	—	—	1900	—	1913
Warren	1855	1855	1880	—	—	1860	—	—	—	1908	—	1878
Warrick	1890	1865	1885	—	—	1850	—	—	—	1890	—	—
Washington	1908	1908	1893	—	—	1875	—	—	—	1915	—	1908
Wayne	1873	1853	1895	—	1898	1873	1913	—	—	1908	—	1908
Wells	1870	1880	1885	1875	1905	1875	1903	—	—	1905	1914	1903
White	1872	1868	1885	—	—	1870	1900	—	—	1908	—	1908
Whitley	1872	1868	1885	—	—	1870	1915	—	—	1908	—	—

TABLE 7

Approximate Year of Introduction of Improved Breeds of Poultry Into the Several Counties

	American Breeds				Asiatic Breeds			Dutch	English	French	Mediterranean			
COUNTY	Dominique	Plymouth Rock	Rhode Island Red	Wyandotte	Brahma	Cochin	Langshan	Hamburg	Orpington	Houdan	Leghorn	Minorca	Black Spanish	Polish
Adams	1850	1870	1895	1898	1890	1905	1870	—	1906	1910	1890	1905	1890	—
Allen	1850	1863	1895	1900	1870	—	1865	—	1880	—	1870	1908	1880	—
Bartholomew	1850	1865	1900	1883	1881	1870	1880	—	—	—	1870	1908	1888	—
Benton	1860	1895	—	1888	1890	1879	1905	—	1915	1893	1889	1904	1884	—
Blackford	1860	1870	1908	1906	1880	1860	1860	1893	1908	1893	1893	1905	1880	1893
Boone	1850	1877	1906	1884	1875	1875	1877	—	1902	1876	1881	1890	—	1875
Brown	1860	1890	1900	1900	1875	—	1895	—	1920	—	1875	1919	—	—
Carroll	1850	1870	1900	1908	1870	1875	1908	1860	1880	1908	1885	—	—	1908
Cass	1850	1870	1878	1890	1878	1878	1878	1895	1888	1881	1870	1870	1878	1883
Clark	1850	1880	1900	1900	1880	1890	—	—	1890	—	1900	1910	—	—
Clay	1860	1888	1903	1888	1875	1875	1875	—	1908	—	1888	1890	1868	—
Clinton	1860	1870	1908	1870	1855	1855	1893	1870	1908	1870	1870	1870	1850	1908
Crawford	1908	1890	1908	1908	—	—	—	—	—	—	1890	1875	—	—
Daviess	1860	1880	1900	1900	1870	1875	1880	—	—	—	1900	—	1908	—
Dearborn	1855	1890	1896	1890	1855	1880	1880	1908	1906	—	1885	1905	1870	—
Decatur	1848	1870	1900	1881	1870	1874	1880	1885	1895	1874	1870	1892	1888	—
DeKalb	1860	1908	1900	1910	1870	1874	1908	1885	1890	1870	1878	1900	1875	—
Delaware	1850	1870	1888	1880	1870	1870	1870	1870	1900	1870	1872	1890	1888	1880
DuBois	1850	1885	—	1890	—	—	—	—	—	—	1885	1908	—	—
Elkhart	1865	1878	1900	1885	1865	1870	—	1870	1894	1893	1892	1889	1870	—
Fayette	1850	1880	1908	1904	1870	1877	1908	—	1904	—	1875	1912	—	—
Floyd	1850	1870	1908	1902	1880	1880	1880	—	1908	—	1890	1908	1875	—
Fountain	1875	1875	1900	1892	1870	1870	1870	—	1900	1870	1875	1880	—	—
Franklin	1850	1870	1895	1890	1853	1885	1885	1878	1903	—	1870	1890	1860	—
Fulton	1850	1860	1890	1885	1875	—	—	—	1908	1885	1900	1900	1870	—
Gibson	1850	1900	1908	1890	1865	1908	1908	1900	1908	—	1900	1908	1860	1908
Grant	1850	1870	1900	1900	1875	1860	1860	1875	1908	1875	1880	1905	1880	1885
Greene	1850	1885	1908	1898	1870	1870	1870	1900	1905	1915	1875	1895	1875	—
Hamilton	1850	1880	1900	1908	1880	1880	1904	1908	1908	1895	1880	1903	1878	1908
Hancock	1850	1880	1903	1895	1893	1855	1895	—	1900	—	1892	1892	1900	1895
Harrison	1850	1870	1900	1890	1870	1890	1890	1890	1908	1870	1883	1900	1880	—

TABLE 7 *(Continued)*

Approximate Year of Introduction of Improved Breeds of Poultry Into the Several Counties

	American Breeds				Asiatic Breeds			Dutch	English	French	Mediterranean			
COUNTY	Dominique	Plymouth Rock	Rhode Island Red	Wyandotte	Brahma	Cochin	Langshan	Hamburg	Orpington	Houdan	Leghorn	Minorca	Black Spanish	Polish
Hendricks	—	1908	—	1908	1886	1870	1890	1908	1908	1908	1870	1873	1870	1898
Henry	1850	1891	1908	1891	1876	1883	1902	—	—	—	1875	—	—	—
Howard	1850	1880	1900	1896	1875	1875	1890	—	1900	—	1875	1906	1860	—
Huntington	—	1890	1908	1895	—	1901	1895	1908	1908	—	1895	1895	1895	1895
Jackson	1850	1876	1900	1890	1870	1875	1875	1890	1898	—	1870	1890	1870	—
Jasper	1855	1908	1908	1908	1855	1875	1908	—	1905	—	1880	1908	1870	1892
Jay	1850	1870	1906	1875	1865	1865	1908	—	1901	—	1880	1910	1880	—
Jefferson	1897	1860	1905	1890	—	—	1890	—	1908	—	1870	—	—	—
Jennings	1850	1870	1900	1900	1875	—	1875	—	1900	—	1870	—	1870	—
Johnson	1850	1881	1908	1891	1874	1881	1881	—	1903	—	1880	1903	1879	—
Knox	1800	1870	1898	1898	1875	1875	1875	—	1905	—	1870	1900	—	—
Kosciusko	1850	1870	1900	1880	1870	1870	1870	1900	1908	1910	1882	1910	1910	1910
LaGrange	1850	1875	1900	1880	1875	1875	1890	1875	1905	1890	1880	1890	1880	—
Lake	1850	1875	1906	1885	1860	1869	1882	—	1908	—	1870	1900	1898	1908
LaPorte	1850	1885	1895	1899	1878	1890	1890	1890	1900	1892	1890	1895	—	1897
Lawrence	1850	1900	1905	1908	1908	1908	—	1908	—	—	1895	—	—	—
Madison	1850	1875	1908	1902	1875	1875	1904	—	1908	—	1876	1880	—	—
Marion	1850	1875	1890	1887	1856	1856	1894	1900	1880	1905	1874	1893	1869	1857
Marshall	1850	1885	1908	1893	1898	1908	1908	1918	1908	1893	1908	1908	—	—
Martin	1850	1908	1908	1886	—	—	1886	—	—	—	1908	—	—	—
Miami	1850	1892	1908	1894	1908	1892	1892	1911	1906	1900	1890	1898	1875	—
Monroe	—	1880	1890	1895	1860	1885	—	1908	1904	—	1850	1908	1850	—
Montgomery	1850	1860	1900	1882	1860	1860	1882	—	1904	1886	1860	1892	1850	1860
Morgan	1850	1890	1908	1905	1875	1890	1904	—	1908	—	1890	1904	1900	—
Newton	1850	1904	1908	1908	—	1890	—	—	1908	—	1908	—	—	1887
Noble	1850	1880	1908	1885	1875	1876	1882	1908	1902	1875	1895	1895	1869	1865
Ohio	1850	1880	1890	1888	1880	1880	1880	1890	1910	—	1880	1895	1870	—
Orange	1850	1895	1900	1885	1865	1865	1860	1900	1900	1900	1875	1900	1900	—
Owen	1857	1890	1900	1908	1870	1908	1908	1870	1900	1878	1900	1918	—	1908
Park	—	1878	1908	1891	1887	1880	1896	1908	1905	1908	1885	1891	1860	1887
Perry	1850	1908	1908	1908	—	—	—	—	—	—	1908	—	—	—

TABLE 7 *(Continued)*

Approximate Year of Introduction of Improved Breeds of Poultry Into the Several Counties

	American Breeds				Asiatic Breeds			Dutch	English	French	Mediterranean			
COUNTY	Dominique	Plymouth Rock	Rhode Island Red	Wyandotte	Brahma	Cochin	Langshan	Hamburg	Orpington	Houdan	Leghorn	Minorca	Black Spanish	Polish
Pike	1850	1885	1908	1895	1880	1880	1880	—	1908	—	1880	1890	1900	—
Porter	1850	1878	1908	1908	1875	1875	1875	1908	1908	1908	1885	1908	1913	1913
Posey	1850	1880	1915	1900	1880	1880	1880	—	1900	1920	1880	1880	—	—
Pulaski	1850	1881	1908	1901	1878	1878	1880	—	1903	—	1875	1905	1905	—
Putnam	1850	1896	1890	1897	1860	1895	1894	1875	1908	1880	1900	1888	1880	1885
Randolph	1850	1885	1906	1882	1883	1883	1883	1883	1908	1883	1878	1890	1875	1875
Ripley	—	1894	1908	1890	1871	1908	1896	—	—	—	1894	1899	1876	1871
Rush	1850	1870	1908	1898	1878	1886	1908	—	1890	—	1896	1899	—	—
St. Joseph	1850	1896	1908	1880	1855	—	—	—	1901	—	1895	1898	1878	1850
Scott	1850	1880	1895	1900	1900	1880	—	—	—	—	1880	1885	1885	—
Shelby	1850	1870	1906	1885	1860	1878	1880	1908	1904	1870	1886	1893	1887	1887
Spencer	1850	1880	1908	1908	—	—	1908	—	1900	—	1908	1918	—	—
Starke	1855	1872	1890	1867	1870	1890	1890	1903	1905	1895	1875	1898	1880	1905
Steuben	1850	1860	1900	1885	1895	1875	1885	1880	1904	1890	1860	1905	1880	1885
Sullivan	1850	1875	1908	1908	1875	1875	1875	—	1900	—	1880	1905	—	—
Switzerland	—	1896	1908	1908	—	—	1908	—	1908	—	1896	1908	1908	—
Tippecanoe	1850	1875	1895	1878	1870	1875	1875	—	1900	—	1885	1890	1885	—
Tipton	1850	1891	—	1892	1891	1891	1901	—	1908	—	1891	—	1890	1892
Union	1850	1880	1908	1878	1868	1870	1878	—	1908	—	1874	—	—	1884
Vanderburg	1850	1870	1900	1900	1890	—	1890	—	1900	1908	1890	1900	—	—
Vermillion	1850	1885	1900	1915	1890	1885	1885	—	1905	1885	1880	—	—	—
Vigo	1850	1880	—	1880	1880	1880	1880	—	1908	—	1880	—	1880	1880
Wabash	1860	1885	1900	1890	1870	1882	1882	—	1900	—	1882	1906	—	—
Warren	1850	1870	1908	1900	1873	1875	1893	—	—	—	1890	—	—	—
Warrick	1840	1860	1908	1890	1880	1893	1908	—	—	—	1850	1900	—	—
Washington	—	1908	1908	1889	1890	1889	1894	—	1908	—	1890	1890	1908	—
Wayne	1850	1875	1903	1893	1865	1875	1875	—	1895	—	1875	1908	1873	1885
Wells	1870	1870	1903	1900	1883	1896	1908	—	1903	—	1890	—	—	—
White	1850	1880	1891	1900	1890	1875	1890	—	1908	1908	1895	1908	1865	—
Whitley	1850	1901	1890	1900	1885	1908	1885	—	1903	—	1880	1918	—	1910

SUMMARY OF DATES OF INTRODUCTION IN INDIANA

Soil Treatment

Tile draining	1872
Fertilizing	1894
Liming	1910

Crops and Cropping

Common Clover	1851
Alfalfa	1899
Cowpeas	1904
Soybeans	1910
Rotation	1874
Late Seeding	1911

Live Stock Feeding, Etc.

Silo	1897
Balanced Rations	1901
Vaccination	1908

Breeds of Live Stock

Beef Cattle

Shorthorns	1862
Herefords	1888
Angus	1891
Polled Shorthorns	1892

Dairy Cattle

Jersey	1881
Holstein	1891
Ayrshire	1905
Guernsey	1908
Brown Swiss	1910

Horses

Percheron	1879
Clydesdale	1884
English Shire	1891
Belgian	1895

Sheep

Merino	1863
Cotswold	1872
Southdown	1876
Shropshire	1886
Hampshire	1898
Oxford	1899
Rambouillet	1906

Swine

Chester White	1873
Poland China	1873
Berkshire	1875
Duroc	1887
Hampshire	1903
Spotted Poland China	1908

Agricultural Implements

Hay loader	1875
Gang plow, about	1880
Twine binder	1881
Fertilizer drills, about	1885
Side delivery rake, about	1890
Corn binder, about	1893
Corn picker, about	1915
Hay drying machinery in Illinois	1922
Hay drying machinery (experimental) in Indiana	1928
Multiple hitch, about	1925
Tandem outfit, about	1925
Ensilage harvester	1927
Four-row planter	1928
Four-row cultivator	1928
Soil pulverizer	1928
Rotary harrow	1928